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STATIONS OF THE REGIMENTS OF THE U. S. ARMY, BY COMPANIES.

(DECEMBER, 1871.)

Regt.	Headquarters.	A	B	C	D	E	F	G	H	I	K
1st Cav.	Willett's Pt, NYH	Willett's Pt, NYH	Willett's Pt, NYH	Willett's Pt, NYH	Willett's Pt, NYH	West Point, N Y	.....	.....	.....	.....	.....
1st	Benicia B'ks, Cal	Tucson, A T	Ft Klamath, Or	Camp McDermitt, Nev	Ft Lapwai, I T	Fort Lapwai, I T	Camp Warner, Or	Camp Bidwell, Cal	Camp Harney, Or	Tucson, A T	Camp Halleck, Nev
21	Omaha, Neb	Ft Ford Steele, WT	CSambaugh, WT	.....	Camp Douglas, UT	Fort McPherson, Neb	Fort Ellis, M T	Fort Ellis, M T	Fort Ellis, M T	Ft Sanders, W T	Omaha, Neb
3d	On arrival of 5th	Cavalry to proceed	from Department	of Arizona to Fort	McPherson, Neb	to be assigned to	duty in Departme	nt of the Platte	Fort Griffin, Tex	Fort Concho, Tex	Ft Richardson, Ts
4th	Ft Richardson, Ts	Ft Richardson, Ts	Missouri to San	Francisco, Milita	Ft Griffin, Tex	Ft Richardson, Ts	igned to duty in	Department of Ar	Fort Dodge, Kas	Fort Riley, Kas	Fort Riley, Kas
5th	En route from Mil	itary Division of	Fort Riley, Kas	Ft Harker, Kas	Ft Division of the	Fort Scott, Kas	Fort Hays, Kas	Fort Dodge, Kas	Fort Dodge, Kas	Fort Dodge, Kas	Fort Dodge, Kas
6th	Fort Riley, Kas	Fort Riley, Kas	Spartanburg, S C	Rutherford, N C	Yorkville, S C	Spartanburg, S C	Fort Union, N M	Fort Union, N M	Fort Union, N M	Fort Union, N M	Fort Union, N M
7th	Louisville, Ky	Elizabeth, N M	Ft Stockton, Tex	Ft Selden, N M	Fort Union, N M	Fort Stockton, Tex	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T
8th	Fort Union, N M	Fort Bayard, N M	Fort Griffin, Tex	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T
9th	Ft Stockton, Tex	Ft Stockton, Tex	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T
10th	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T	Fort Sill, I T
Art.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1st	Fort Hamilton, N Y	Ft Ontario, N Y	Ft Wadsworth, N Y	Fort Hamilton, N Y	Fort Hamilton, N Y	Fort Wood, NYH	Madison Bks, NY	Ft Monroe, Va	Fort Hamilton, N Y	Fort Wood, NYH	Fort Hamilton, N Y
2d	Presidio, S Fr, Cal	Presidio, Cal	Alcatraz Isl, Cal	Sitka, Alaska	Presidio, Cal	Ft Cape Disap'tm't	Presidio, Cal	Alcatraz Isl'd, Cal	Presidio, Cal	Sitka, Alaska	Ft Monroe, Va
3d	Charleston, S C	Fort Monroe, Va	Key West, Fla	Charleston, S C	Key West, Fla	Ft Pulaski, Ga	Ft Jefferson, Fla	Ft Barrancas, Fla	Ft Pulaski, Ga	Spartanburg, S C	Savannah, Ga
4th	Ft McHenry, Md	Charlotte, N C	Rutherford, N C	Rutherford, N C	Rutherford, N C	Ft McHenry, Md	Ft Adams, R I	Plattsburg B'ks, N Y	Ft Trumbull, Conn	Ft Trumbull, Conn	Ft Sullivan, Me
5th	Fort Adams, R I	Fort Adams, R I	Fort Adams, R I	Fort Adams, R I	Fort Adams, R I	Fort Adams, R I	Fort Adams, R I	Fort Adams, R I	Fort Adams, R I	Fort Adams, R I	Fort Adams, R I
6th	Fort Wayne, Mich	Fort Brady, Mich	Madison B'ks, NY	Fort Wayne, Mich	Fort Wayne, Mich	Fort Wayne, Mich	Fort Wayne, Mich	Fort Wayne, Mich	Fort Wayne, Mich	Fort Wayne, Mich	Fort Wayne, Mich
7th	Huntsville, Ala	Huntsville, Ala	Huntsville, Ala	Huntsville, Ala	Huntsville, Ala	Huntsville, Ala	Huntsville, Ala	Huntsville, Ala	Huntsville, Ala	Huntsville, Ala	Huntsville, Ala
8th	Ft Wallace, Kas	Ft Wallace, Kas	Ft Larned, Kas	Ft Larned, Kas	Ft Larned, Kas	Ft Larned, Kas	Ft Larned, Kas	Ft Larned, Kas	Ft Larned, Kas	Ft Larned, Kas	Ft Larned, Kas
9th	Frankfort, Ky	Lexington, Ky	Crab Orchard, Ky	Lancaster, Ky	Paducah, Ky	Mt Sterling, Ky	Elizabeth, Ky	Frankfort, Ky	Louisville, Ky	Lebanon, Ky	Frankfort, Ky
10th	Ft Leavenworth, Kas	Ft Leavenworth, Kas	Fort Scott, Kas	Fort Scott, Kas	Fort Scott, Kas	Fort Scott, Kas	Fort Scott, Kas	Fort Scott, Kas	Fort Scott, Kas	Fort Scott, Kas	Fort Scott, Kas
11th	Fort Hays, Kas	Fort Hays, Kas	Camp Supply, Kas	Camp Supply, Kas	Camp Supply, Kas	Camp Supply, Kas	Camp Supply, Kas	Camp Supply, Kas	Camp Supply, Kas	Camp Supply, Kas	Camp Supply, Kas
12th	Fort Shaw, M T	Fort Shaw, M T	Fort Shaw, M T	Fort Shaw, M T	Fort Shaw, M T	Fort Shaw, M T	Fort Shaw, M T	Fort Shaw, M T	Fort Shaw, M T	Fort Shaw, M T	Fort Shaw, M T
13th	David's Isl, NYH	David's Isl, NYH	David's Isl, NYH	David's Isl, NYH	David's Isl, NYH	David's Isl, NYH	David's Isl, NYH	David's Isl, NYH	David's Isl, NYH	David's Isl, NYH	David's Isl, NYH
14th	Ft DARRussell, WT	Ft DARRussell, WT	Ft DARRussell, WT	Ft DARRussell, WT	Ft DARRussell, WT	Ft DARRussell, WT	Ft DARRussell, WT	Ft DARRussell, WT	Ft DARRussell, WT	Ft DARRussell, WT	Ft DARRussell, WT
15th	Fort Brown, Tex	Fort Brown, Tex	Ringgold B'ks, Ts	San Antonio, Ts	Austin, Tex	Ringgold B'ks, Tex	Ft McIntosh, Tex	Fort Brown, Tex	Fort Brown, Tex	Ringgold B'ks, Tex	Ft Brown, Tex
16th	Fort Griffin, Tex	Fort Griffin, Tex	Fort Griffin, Tex	Fort Griffin, Tex	Fort Griffin, Tex	Fort Griffin, Tex	Fort Griffin, Tex	Fort Griffin, Tex	Fort Griffin, Tex	Fort Griffin, Tex	Fort Griffin, Tex
17th	Angel Island, Cal	Camp Wright, Cal	Camp Independence, Cal	Fort Hall, I T	Fort Yuma, Cal	Camp Gaston, Cal	Beale's Springs, A T	Camp Mojave, AT	Fort Brown, Tex	Ringgold B'ks, Tex	Ft Brown, Tex
18th	Ft Ford Steele, WT	Camp Brown, WT	Camp Douglas, UT	Camp Douglas, UT	Camp Douglas, UT	Camp Douglas, UT	Camp Douglas, UT	Camp Douglas, UT	Camp Douglas, UT	Camp Douglas, UT	Camp Douglas, UT
19th	Ft Laramie, W T	Ft Laramie, W T	Ft Laramie, W T	Ft Laramie, W T	Ft Laramie, W T	Ft Laramie, W T	Ft Laramie, W T	Ft Laramie, W T	Ft Laramie, W T	Ft Laramie, W T	Ft Laramie, W T
20th	Santa Fe, N M	Ft Wingate, N M	Fort McRae, N M	Fort Garland, C T	Fort Union, N M	Fort Cummings, NM	Fort Bayard, N M	Fort Bayard, N M	Fort Bayard, N M	Fort Bayard, N M	Fort Bayard, N M
21st	Nashville, Tenn	Louisville, Ky	Jackson, Miss	Aberdeen, Miss	Humboldt, Tenn	Louisville, Ky	Nashville, Tenn	Nashville, Tenn	Nashville, Tenn	Nashville, Tenn	Nashville, Tenn
22d	Fort Rice, D T	G'd River Agency, D T	Cheyenne Agency, D T	Cheyenne Agency, D T	Fort Rice, D T	Fort Stevenson, D T	G'd River Agency, D T	Fort Rice, D T	Fort Rice, D T	Fort Rice, D T	Fort Rice, D T
23d	Columbia, S C	Atlanta, Ga	Columbia, S C	Yorkville, S C	Columbia, S C	Atlanta, Ga	Sumter, S C	Columbia, S C	Chester S C	Columbia, S C	Newberry, N C
24th	Baton Rouge, La	Baton Rouge, La	Baton Rouge, La	Baton Rouge, La	Baton Rouge, La	Baton Rouge, La	Baton Rouge, La	Baton Rouge, La	Baton Rouge, La	Baton Rouge, La	Baton Rouge, La
25th	Ft Snelling, Minn	Fort Totten, D T	Ft Wadsworth, D T	Ft Ransom, D T	Ft Ransom, D T	Ft Snelling, Minn	Fort Wadsworth, D T	Fort Ripley, M T	Fort Totten, D T	Ft Pembina, D T	Fort Pembina, D T
26th	Presidio, S Fr, Cal	Camp Lowell, AT	Camp Apache, AT	Ft Whipple, A T	Camp Lowell, AT	Camp Crittenden, AT	Camp Grant, A T	Camp Bowie, A T	Camp Creek, AT	Camp McDowell, AT	Camp Crittenden, AT
27th	Fort Sully, D T	Fort Sully, D T	Fort Sully, D T	Fort Sully, D T	Fort Sully, D T	Fort Sully, D T	Fort Sully, D T	Fort Sully, D T	Fort Sully, D T	Fort Sully, D T	Fort Sully, D T
28th	Ft Vancouver, WT	Fort Boise, I T	Camp Warner, Or	Ft Vancouver, WT	Ft Vancouver, WT	Ft Lapwai, I T	Camp San Juan, I T	Ft Colville, W T	Ft Vancouver, WT	Camp Harney, Or	Ft Klamath, Or
29th	Ft McKavett, Tex	Ft McKavett, Tex	Ft McKavett, Tex	Ft McKavett, Tex	Ft McKavett, Tex	Ft McKavett, Tex	Ft McKavett, Tex	Ft McKavett, Tex	Ft McKavett, Tex	Ft McKavett, Tex	Ft McKavett, Tex
30th	Fort Clark, Tex	Fort Clark, Tex	Fort Bliss, Tex	Fort Clark, Tex	Fort Clark, Tex	Fort Clark, Tex	Fort Clark, Tex	Fort Clark, Tex	Fort Clark, Tex	Fort Clark, Tex	Fort Clark, Tex

First Cavalry—Companies L and M, Camp Apache, A T. Second Cavalry—Company L, Fort Ellis, M T; Company M, Omaha, Neb. Fourth Cavalry—Company L, Fort Richardson, Tex; Company M, San Antonio, Tex. Sixth Cavalry—Company L, Fort Riley, Kas; Company M, Fort Lyon, C T. Seventh Cavalry—Company L, Yorkville, S C; Company M, Spartanburg, S C. Eighth Cavalry—Company L, Fort Union, N M; Company M, Fort Garland, C T. Ninth Cavalry—Company L, Fort Duncan, Tex; Company M, Fort McKavett, Tex. Tenth Cavalry—Companies L and M, Fort Sill, I T. First Artillery—Company L, Fort Niagara, N Y; Company M, Plattsburg Barracks, N Y. Second Artillery—Company L, Point San Jose, Cal; Company M, Fort Stevens, Or. Third Artillery—Companies L and M, Fort Jefferson, Fla. Fourth Artillery—Company L, Fort Macon, N C; Company M, Fort Washington, M I. Fifth Artillery—Company L, Fort Adams, R I; Company M, Fort Preble, Me.

As the communications of Camp Supply, Indian Territory, are by way of Forts Dodge and Hays, that post—with the military duties and questions relating thereto—is for the present with the approbation of the Secretary of War, placed under control of the commanding general Department of the Missouri.

To carry into effect so much of General Orders No. 6, current series headquarters Military Division of the South, as refers to the Department of the South, it is announced in General Orders No 76, December 1, from that department, that hereafter the Department of the South will consist of the States of Kentucky, Alabama, Tennessee, Georgia, North Carolina, South Carolina, and Florida, excepting Forts Jefferson, Taylor, and Barrancas. The commanding officers of posts in the State of Mississippi, of Forts Jefferson, Taylor, and Barrancas, Florida, will report by letter for duty to Colonel W. H. Emory, commanding Department of the Gulf, New Orleans, La.

In reviewing the proceedings of the Court-martial at Fort D. A. Russell, Brigadier-General Augur, commanding Department of the Platte, says: "On the second day of the trial of this case Major E. A. Carr, Fifth Cavalry, who was absent on account of illness at the previous session, appeared and took his seat. The record reads as follows: 'Major Carr here announced to the court that as he was absent from the last sitting of the court and had not been sworn in with the other members now present, he considered himself incompetent to take any further part in the proceedings in the case, notwithstanding no evidence had been taken. Major Carr then announced that he considered himself competent to decide upon his own eligibility to sit as a member in the case, and thereupon withdrew, without any action being taken by the other members of the court in the matter.' The position taken by Major Carr was incorrect. The question of his eligibility was one for the decision, not of himself, but of the court. Had he been challenged by the prisoner on the grounds stated by him, it would have been for the Court, and not him, to determine whether he should remain or retire: but here the record shows that he first challenged himself, and then sustained the challenge on his individual judgment. The matter was in fact for the decision of the prisoner; at least in part. Major Carr having stated his reasons for deeming

himself ineligible, the prisoner should have been asked if he desired to challenge that officer or objected to his sitting. Had he answered in the affirmative the Court would then have passed upon the question; if in the negative, thus waiving any exception, no further steps would have been needed. The sitting of Major Carr not being *per se* fatal to the validity of the subsequent proceedings, neither that officer nor the Court should have taken decisive action in the matter until it was ascertained that the prisoner refused to waive the objection."

THE War Department Dec. 9 sent to the Secretary of the Interior a long extract from the report of Lieutenant-Colonel N. H. Davis, assistant inspector-general, containing information obtained by him under the orders of Major-General Pope, in regard to the Apache Indians of southern New Mexico. Colonel Davis reports having made a careful inspection in accordance with his instructions. He says there are about 400 Apaches at Fort Stanton, where they have remained at peace and been fed by the Government since last June and July, at which time they came in; and that about twelve hundred Apaches have been at the Canada Alamosa during the past year, nominally at peace, though guilty of committing several murders and thieving depredations, as he proceeds to show. Colonel Davis states as the result of his experience and acquaintance with the Apaches during several years, that they are with reason regarded proverbially as treacherous and hostile. He relates the history of Chachise, whom he terms the terror and curse of the people of Arizona and New Mexico, and recites the efforts made for peace with him, resulting in his voluntarily coming in and promising to remain peaceably on the reservation. At the date of his report, October 25, Colonel Davis speaks of Chachise as being still on the reservation on the Tuberosa river, selected by Vincent Colyer—a good place for the Indians, old men, women, and children, and favorable for marauding upon the mining farms and travelling community, should the Apaches be disposed to renew their past depredations, as, he thinks, there is every reason to suppose they will. The reservation is in a beautiful valley, bounded by a rough, mountainous region, difficult for military operations therein, yet presenting no considerable barrier to Indian movements or check to Indian depredations.

The Apaches now at Canada Alamosa object to being removed.

## ABSTRACT OF SPECIAL ORDERS

Issued from the Adjutant-General's Office for the week ending December 11, 1871.

Tuesday, December 5.

CORPORAL Alexander Jungbluth, Company A, Seventeenth Infantry, having performed the duties assigned him in Special Orders No. 134, November 12, 1871, from headquarters Grand River Agency, Dakota Territory, will return to his station at Grand River Agency, with permission to delay thirty days en route. The Quartermaster's Department will furnish the necessary transportation. Commutation of subsistence at the usual rates will be furnished while en route, (not including the thirty days he is permitted to delay.)

Private William Dempsey, Company A, Seventeenth Infantry, having performed the duties assigned him in Special Orders No. 134, November 12, 1871, from headquarters Grand River Agency, Dakota Territory, will return to that post without unnecessary delay. The Quartermaster's Department will furnish the necessary transportation. Commutation of subsistence at the usual rates will be furnished while en route.

Captain William W. Sanders, Sixth Infantry, will report to Colonel William H. Emory, commander of the Department of the Gulf, for duty as aide-de-camp.

The leave of absence granted on surgeon's certificate of disability to First Lieutenant Stephen K. Mahon, Sixteenth Infantry, in Special Orders No. 71, November 9, 1871, from headquarters Military Division of the South, is hereby extended thirty days.

First Lieutenant Thomas E. Merritt, Twenty-fourth Infantry, will report in person without delay to the superintendent general recruiting service, New York city, to accompany recruits now under orders for the Department of Texas. On completion of this duty Lieutenant Merritt will join his proper station.

Private John Hunter, Company D, Twenty-second Infantry, now with his command, will be dishonorably discharged the service of the United States, without pay or allowances, upon the receipt of this order at the place where he may be serving.

Private John Logan, Company F, Third Infantry, now with his command, will report in person without delay to the adjutant-general U. S. Army. The Quartermaster's Department will furnish the necessary transportation. Commutation of subsistence at the usual rates will be furnished while en route if it is impracticable to provide subsistence in kind.

Private Morris D. Mason, Company C, Eighteenth Infantry, now at headquarters Military Division of the Missouri, will be discharged the service of the United States, without pay or allowances, upon the receipt of this order at the place where he may be serving.



Wednesday, December 6.

The leave of absence granted Second Lieutenant Thomas M. Fisher, Twenty-third Infantry, in Special Orders No. 148, September 19, 1871, from headquarters Military Division of the Pacific, is hereby extended three months.

Second Class Private Charles V. Tate, Ordnance Department U. S. Army, now at Rock Island Arsenal, Illinois, will be discharged the service of the United States upon the receipt of this order at the place where he may be serving.

Thursday, December 7.

Private Thomas Aldworth, Company A, permanent party, General Service U. S. Army, Fort Columbus, New York Harbor now in confinement with his command, will be discharged the service of the United States upon the receipt of this order at the place where he may be confined.

Private John Brown, Company G, Nineteenth Infantry, now with his command, will report in person without delay to the Adjutant-General U. S. Army. The Quartermaster's Department will furnish the necessary transportation. Commutation of subsistence at the usual rates will be furnished while en route.

On the recommendation of the Surgeon-General, the following changes in the stations and duties of officers of the Medical Department are hereby made: Surgeon John H. Frantz is relieved from duty in the Department of the Platte, and will proceed to Baltimore, Maryland, reporting by letter upon his arrival there to the Surgeon-General; Assistant-Surgeon Henry M. Cronkite will report in person to the commanding general Department of the South for assignment to duty; Assistant-Surgeon Richard Powell will report in person to the commanding officer Department of the Gulf for assignment to duty; Assistant-Surgeon William J. Wilson will report in person to the commanding General Department of the Missouri for assignment to duty.

Corporal Mark Gibbon, Battery B, Second Artillery, having been appointed hospital steward U. S. Army, will report in person to the commanding officer Department of Arizona for assignment to duty. The Quartermaster's Department will furnish the necessary transportation, and the Subsistence Department commutation of rations at the usual rates.

The resignation of First Lieutenant James E. Batchelder, Second Cavalry, has been accepted by the President, to take effect December 4, 1871.

Friday, December 8.

Leave of absence for six months, on surgeon's certificate of disability, is hereby granted Lieutenant-Colonel Thomas Duncan, Fifth Cavalry.

The leave of absence granted Assistant-Surgeon James P. Kimball, in Special Orders No. 210, September 14, 1871, from headquarters Department of Dakota, is hereby extended sixty days.

Private John T. Williams, Company K, Fifth Cavalry, now on furlough in this city, will be discharged the service of the United States upon the receipt of this order by the commanding officer of his company, who will forward the discharge papers of the soldier to this office. This soldier is not entitled to travel pay.

The following named enlisted men will be discharged the service of the United States upon the receipt of this order at the places where they may be serving. These men are not entitled to travel pay: Sergeant Thomas Ryan, Company I, Fifth Cavalry; Private Frank W. Whittemore, General Service U. S. Army, now with Signal Service detachment U. S. Army, at Fort Whipple, Virginia.

Private Edward W. Smith, General Service U. S. Army, now on duty as clerk in this office, is hereby discharged the service of the United States, to date November 30, 1871.

By direction of the President, Private William H. Merrill, Battery I, Second Artillery, now with his command, will be discharged the service of the United States upon the receipt of this order at the place where he may be serving. This soldier is not entitled to travel pay.

The extension of leave of absence granted Second Lieutenant James McB. Stembel, Ninth Infantry, in Special Orders No. 73, October 14, 1871, from headquarters Military Division of the Missouri, is hereby further extended thirty days.

Second Lieutenant Colon Augur, Second Cavalry, will report in person to Brigadier-General C. C. Augur, commanding Department of Texas, for duty as aide-de-camp.

Paragraph 1, Special Orders No. 433, November 6, 1871, from this office, revoking the mutual transfer of John Trindle and Charles N. Ruby, superintendents of national cemeteries, is hereby rescinded, and paragraph 1 of Special Orders No. 397, October 10, 1871, from this office, directing the transfer, will be carried into effect.

Saturday, December 9.

So much of the sentence of a General Court-martial, promulgated in General Court-martial Orders No. 52, of June 26, 1871, from headquarters Department of Texas, as directs that Private John Ott, Company G, Nineteenth Infantry, "be confined at hard labor at Fort Jackson, Louisiana, for the period of two years," is hereby so far remitted as to make the term of his confinement six months, commencing June 26, 1871, the date of the promulgation of his sentence in orders.

So much of the unexecuted portion of the sentence of a General Court-martial, promulgated in General Court-martial Orders No. 32, of April 1, 1871, from headquarters Department of Texas directing that Private Harry Fisher, Company M, Fourth Cavalry, "be confined at hard labor at Fort Jackson, Louisiana, for the period of three years," is hereby so far remitted as to make the term of his confinement one year, commencing April 1, 1871, the date of the promulgation of his sentence in orders.

So much of the unexecuted portion of the sentence of a General Court-martial, promulgated in General Orders No. 82, of December 19, 1870, from headquarters Department of Texas, as directs that Private John Johnson, Company L, Ninth Cavalry, "be confined at Fort Jackson, Louisiana, for the period of five years," is hereby so far remitted as to make the term of his confinement one year, commencing December 19, 1870, the date of the promulgation of his sentence in orders.

So much of the sentence of a General Court-martial, promulgated in General Court-martial Orders No. 36, of April 8, 1871, from headquarters Department of Texas, as directs that Private Edward Turner, Company D, Twenty-fourth Infantry, "be confined at hard labor at Fort Jackson, Louisiana, for the period of five years," is hereby so far remitted as to make the term of his confinement one year, commencing April 8, 1871, the date of the promulgation of his sentence in orders.

The unexecuted portion of the sentence of a General Court-martial, promulgated in General Orders No. 11, of May 5, 1870, from headquarters Department of Texas, directing that Private Thomas Sandwich, Company H, Twenty-fourth Infantry, "be dishonorably discharged the service of the United States, to forfeit all pay and allowances now due or to become due, and to be confined at hard labor at Fort Jackson, Louisiana, for seven years," is hereby remitted, and he will be released from confinement upon the receipt of this order at the place where he may be confined.

The telegraphic order of the 7th instant, from this office, directing the superintendent Mounted Recruiting Service to forward one hundred recruits to Fort D. A. Russell, Wyoming Territory, for assignment to the Fifth Cavalry, is hereby confirmed. The Quartermaster's Department will furnish the necessary transportation.

Captain John P. Hawkins, Commissary of Subsistence, is hereby appointed to act as inspector on certain unserviceable clothing, camp and garrison equipage, and commissary property on hand at Detroit Arsenal, Michigan, for which Major John W. Todd, Ordnance Department, is responsible.

The leave of absence granted Major George Gibson, Fifth Infantry, in Special Orders No. 196, October 30, 1871, from headquarters Department of the Missouri, is hereby extended sixty days.

The following transfers of superintendents of National Cemeteries are hereby announced: Superintendent Rufus C. Taylor, from the cemetery at Corinth, Miss., to that at Mound City, Ill.; Superintendent Joseph Berigan, from the cemetery at Mound City, Ill., to that at Corinth, Miss. The superintendents thus transferred will join their proper stations without delay. The Quartermaster's Department will furnish the necessary transportation.

Monday, December 11.

The board of officers convened in New York city by paragraph 6, Special Orders No. 260, July 3, 1871, from this office, for the purpose of preparing "a system of General Regulations for the administration of the affairs of the Army," is hereby authorized to adjourn to Washington, D. C., on the 3d day of January, 1872.

So much of the sentence of a General Court-martial, promulgated in General Orders No. 41, of July 3, 1871, from headquarters Department of the South, as directs that recruit John Finn, General Service U. S. Army, "be confined at Fort Pulaski, Georgia, for a period of two years," is hereby so far remitted as to make the term of his confinement one year, commencing July 3, 1871, the date of the promulgation of his sentence in orders.

The unexecuted portion of the sentence of a General Court-martial, promulgated in General Orders No. 24, of June 3, 1871, from headquarters Department of the South, directing that Private John Bile, Company G, Eighteenth Infantry, "forfeit to the United States all pay and allowances now due or that may become due, to have his head shaved, to be dishonorably discharged the service of the United States and drummed out of the garrison, and then to be confined at Fort Pulaski, Georgia, for the period of four years," is hereby remitted, and he will be released from confinement upon the receipt of this order at the place where he may be confined.

Ordnance Sergeant Charles Seidler, U. S. Army, now at Fort Gibson, Indian Territory, will report in person without delay to the commanding officer Fort Stockton, Texas, for duty at that post. The Quartermaster's Department will furnish the necessary transportation. Commutation of subsistence at the usual rates will be furnished while en route.

Leave of absence for five months, to take effect when his services can be spared by his district commander, is hereby granted Captain William McCleave, Eighth Cavalry.

The extension of leave of absence granted Captain Robert P. Wilson, Fifth Cavalry, in Special Orders No. 427, November 1, 1871, from this office, is hereby further extended six months.

Captain William H. Brown, Fifth Cavalry, will repair to this city for the purpose of explaining his quartermaster's accounts now before the Third Auditor of the Treasury. He will return to his station on being notified by that officer that his presence here is no longer necessary.

The resignations of the following named officers have been accepted by the President, to take effect on the dates set opposite their respective names: Captain George E. Alden, assistant quartermaster, December 9, 1871; Captain Henry E. Alvord, Ninth Cavalry, December 9, 1871; Second Lieutenant Edward G. Stevens, Fifth Cavalry, December 1, 1871.

A GENERAL Court-martial was ordered to convene at Key West, Florida, December 15. Detail for the Court: Lieutenant-Colonel Romeyn B. Ayres, Third Artillery; Captain Erskine Gittings, Third Artillery; First Lieutenant Constantine Chase, Third Artillery; First Lieutenant Albert F. Pike, Third Artillery; First Lieutenant Henry B. Osgood, Third Artillery; Second Lieutenant Charles W. Hobbs, Third Artillery; Second Lieutenant Benjamin H. Randolph, Third Artillery. First Lieutenant Charles S. Heintzelman, Third Artillery, judge-advocate.

## ARMY PERSONAL.

CAPTAIN Henry E. Alvord, of the Ninth Cavalry, has resigned, and takes charge of his father's estate at Lewensville, Fairfax county, Va.

CAPTAIN E. G. Fechet, Eighth Cavalry, was ordered December 4 to make the inspection at Fort Bayard, N. M., previously prescribed for Captain William Kelly, Eighth Cavalry.

LEAVE of absence for thirty days was granted Captain William Fletcher, Twentieth Infantry, with permission to apply to headquarters Military Division of the Missouri, for an extension of thirty days, December 2.

HOSPITAL Steward Herko Koeter, U. S. Army, was assigned to duty at Lower Brulé Agency, Dakota Territory, December 2, and Hospital Steward August Gecks, U. S. Army, to duty at Cheyenne Agency, Dakota Territory.

LIEUTENANT-COLONEL Thomas H. Neill, Sixth Cavalry, was relieved December 4 from the command of the troops in southeastern Kansas. He will repair to Fort Riley, Kansas, and assume command of that post and of his regiment.

THOMAS B. ROBINSON, Nineteenth Infantry, received orders by telegraph from headquarters Department of the Gulf, December 3, after turning over the property in his possession, to proceed to Little Rock, Arkansas, and join his company.

FORT Wood, New York Harbor, was inspected on Tuesday last, December 12, by Brigadier-General McDowell, commanding Department of the East, who was accompanied by First Lieutenant John H. Coster, Eighth Cavalry, aide-de-camp.

THE leave of absence for seven days granted Captain H. W. Closson, First Artillery, by the commanding officer Fort Hamilton, New York Harbor, December 6, was extended three days by orders from headquarters Department of the East, December 11.

LEAVE of absence for fifteen days was granted to Captain W. A. Elderkin, Subsistence Department U. S. Army, by orders from headquarters Department of the Missouri December 5, and leave of absence for thirty days to Acting Assistant Surgeon J. H. Collins, U. S. Army.

LEAVE of absence from December 14, to January 3, was granted Captain E. R. Warner, Third Artillery, in orders from headquarters Department of the East, and leave of absence for thirty days to take effect on the 20th instant to First Lieutenant Charles Porter, Eighth Infantry.

DURING the temporary absence of the chief paymaster of the District of New Mexico, Major A. B. Carey, paymaster U. S. Army, will pay all current expenses and accounts presented pertaining to that office. Major J. B. M. Potter, chief paymaster District of New Mexico, will turn over the necessary funds for that purpose.

LEAVE of absence for thirty days was granted Captain William Kelly, Eighth Cavalry, from headquarters Department of the Missouri, December 8, and leave of absence for thirty days, with permission to apply at headquarters Military Division of the Missouri for an extension of ten days to Second Lieutenant William H. McMinn, Eighth Infantry.

THE following officers were registered at headquarters Department of the East, for the week ending December 12, 1871: Captain Lynde Catlin, Eleventh Infantry; Captain H. A. Du Pont, Fifth Artillery; Second Lieutenant D. F. Stiles, Tenth Infantry; First Lieutenant T. E. Merritt, Twenty-fourth Infantry; Captain A. D. Palmer, Fourth Artillery.

FIRST Lieutenant A. G. Forse, First Cavalry, was relieved Nov. 14, from duty as judge-advocate of the General Court-martial convened at the cavalry depot St. Louis, Mo., and First Lieutenant Theodore J. Wint, Fourth Cavalry, relieved from duty as member of the court. First Lieutenant Theodore J. Wint, Fourth Cavalry was detailed as judge-advocate of the court.

SECOND Lieutenant R. E. Thompson, Sixth Infantry, was relieved December 1, from duty as member of the General Court-martial convened at Fort Wallace, Kansas, and First Lieutenant Lemuel A. Abbott, Sixth Cavalry, was relieved from duty as member of the General Court-martial convened at Fort Riley, Kansas, and Second Lieutenant H. P. Perrine, Sixth Cavalry, is detailed as a member.

CAPTAIN J. F. Ritter, Eighth Infantry, was relieved December 9 from duty as a member of the General Court-martial convened at David's Island, New York Harbor, and Captain W. S. Worth, Eighth Infantry, detailed in his place. First Lieutenant Thomas Wilhelm, adjutant Eighth Infantry, was also relieved from the same duty. First Lieutenant E. D. Wheeler, First Artillery, being detailed to take his place.

A GENERAL Court-Martial was appointed to meet at Fort Snelling, Minn., December 14. Detail for the court: Colonel George Sykes, Twentieth Infantry; Surgeon A. Heger, U. S. Army; Captain Hamilton Lieber, M. S. K., U. S. Army; First Lieutenant L. M. Morris, Twentieth Infantry; First Lieutenant T. W. Lord, Twentieth Infantry; Second Lieutenant Herbert Cushman, Twentieth Infantry. First Lieutenant S. E. Carncross, Twentieth Infantry, judge-advocate.

LEAVE of absence for thirty days, with permission to apply at headquarters Military Division of the Missouri for an extension of thirty days, was granted Captain Charles D. Viele, Tenth Cavalry, in orders from headquarters Department of the Missouri, December 2, 1871 and to Captain Louis T. Morris, Third Infantry, when the General Court-martial convened at Fort Wallace, Kansas, of which he is a member has completed its duties.

A GENERAL Court-martial was appointed to meet at Fort Pembina, Dakota Territory, December 14, 1871. Detail for the court: Captain Loyd Wheaton, Twentieth



Infantry; Captain A. A. Harback, Twentieth Infantry; First Lieutenant O. O. Bradley, Twentieth Infantry; First Lieutenant Paul Harwood, Twentieth Infantry; Assistant Surgeon Ezra Woodruff, U. S. Army. First Lieutenant W. R. Maize, Twentieth Infantry, judge-advocate.

A GENERAL Court-martial was appointed to meet at Fort Columbus, New York Harbor, December 11. Detail for the court: Major M. M. Blunt, Fourteenth Infantry; First Lieutenant W. E. Dougherty, First Infantry; First Lieutenant Mott Hooton, Twenty-second Infantry; First Lieutenant Thomas Wilhelm, adjutant Eighth Infantry; First Lieutenant F. C. Nichols, First Artillery; First Lieutenant A. H. Merrill, First Artillery. First Lieutenant J. W. Dillenback, First Artillery, judge-advocate.

A GENERAL Court-martial was appointed to meet at Fort Wayne, Michigan, December 7. Detail for the court: Lieutenant-Colonel P. Lugenbeel, First Infantry; Captain R. H. Offley, First Infantry; Captain Kinzie Bates, First Infantry; First Lieutenant D. F. Callinan, First Infantry; First Lieutenant H. R. Jones, First Infantry; First Lieutenant Allen Smith, adjutant First Infantry; Second Lieutenant J. Sumner Rogers, First Infantry; Second Lieutenant G. S. Jennings, First Infantry, judge-advocate.

A GENERAL Court-martial was appointed to meet at David's Island, New York Harbor, December 9. Detail for the court: Lieutenant-Colonel H. D. Wallen, Eighth Infantry; Captain J. F. Ritter, Eighth Infantry; Captain J. J. Van Horn, Eighth Infantry; First Lieutenant Charles Porter, Eighth Infantry; First Lieutenant E. B. Savage, Eighth Infantry; Second Lieutenant P. H. Ray, Eighth Infantry; Second Lieutenant J. McE. Hyde, Eighth Infantry. Second Lieutenant John O'Connell, Eighth Infantry, judge-advocate.

LEAVE of absence for thirty days with permission to apply to the Adjutant-General of the Army, through headquarters Military Division of the Missouri, for an extension of sixty days, was granted Lieutenant-Colonel John R. Brooke, Third Infantry, in orders from headquarters Department of the Missouri, December 1, 1871. Leave of absence for thirty days with permission to apply at headquarters Military Division of the Military for an extension of thirty days to Captain E. R. Ames, Sixth Infantry; and leave of absence for thirty days to First Lieutenant J. H. Sands, Sixth Cavalry, to take effect when the General Court-martial convened at Fort Wallace, Kansas, of which he is a member, has completed its duties.

#### CHANGES OF STATIONS.

The following is a list of the changes of stations of troops reported at the War Department since last report:

Companies A and I, First Cavalry, from field service in Arizona, to Camp McDowell, A. T., November 11.  
Company D, Third Cavalry, from Camp McDowell, A. T., to Camp Grant, A. T., November 11.

#### REPORT OF THE CHIEF OF ORDNANCE.

WAR DEPARTMENT, ORDNANCE OFFICE, Oct. 24, 1871.

SIR: I have the honor to submit the following report of the principal operations of the Ordnance Department during the fiscal year ended June 30, 1871, with such remarks and recommendations as the interests of that branch of the military service seem to require.

The fiscal resources and disbursements of the Department during the year were as follows, viz:

Amount of appropriations in Treasury June 30, 1870.....	\$25,499,779 70
Amount in Government depositories, to credit of disbursing officers, on same date.....	377,754 87
Amount of deposits in Treasury not reported to the credit of the appropriations on the same date.....	99,937 78
Amount of appropriations from July 1, 1870, to June 30, 1871, including the fixed annual appropriations for arming and equipping the militia.....	762,912 85
Amount received since June 30, 1870, on account of damages to arms in hands of troops, from sales of arms to officers, and condemned stores, and from all other sources not before mentioned.....	9,960,895 97
Total.....	\$25,700,710 85
Amount of expenditures since June 30, 1870.....	\$1,644,050 43
Amount of expenditures attending auction sales of ordnance stores since June 30, 1870, preparing them for sale and transporting them to place of sale.....	239,030 90
Amount of deposits in Treasury not reported to the credit of the appropriations.....	706,537 83
Amount in Government depositories to credit of disbursing officers on June 30, 1871.....	346,796 32
Amount of appropriations in Treasury on same date.....	\$22,764,293 17
Total.....	\$25,700,710 85

During the last fiscal year there existed a great demand in Europe for small arms and other ordnance stores, and this Department took advantage of it and sold, at fair prices, about ten millions of dollars' worth of small arms and other ordnance stores, under authority given by Congress in July, 1868. The proceeds of the sales, except a small sum which is retained to meet expenses incurred in preparing other stores for sale, have passed from the control of this Department and into the Treasury.

The operations at the arsenals have been confined chiefly to the manufacture of such supplies as were required for issue to the troops; to the manufacture of a small extra supply of cartridges for small arms; to the care and preservation of the large quantities of ordnance stores which are on hand, and which require frequent overhauling and cleaning; and to the manufacture of one or two experimental gun-carriages.

The construction of the Rock Island Arsenal has been carried on as rapidly as the liberal appropriations made by Congress would allow. Two of the workshops are nearly completed, and will very shortly be occupied, one as a storehouse, and the other in place of the temporary workshops which are to be removed. The act of Congress of April, 1864, authorized and empowered the Secretary of War to take possession of the whole of the island of Rock Island, and directed him to build thereon and maintain an arsenal for the construction, deposit, and repair of arms and munitions of war. It seems manifest that Congress intended that this arsenal should be made the great arsenal of deposit and construction for the Mississippi Valley, and that it should possess the manufacturing capacities of the national armory at Springfield, Massachusetts, and of one of our largest arsenals of construction, and it was planned with that view, and has been so built. Its location is most admirable, and its importance and value to the Government, especially in time of war, will be very great, almost incalculably so. A recent inspection of this arsenal has shown me that the work is being economically, rapidly, and well done. I hope that the appropriations asked for the next fiscal year will be granted by Congress.

The operations at the Springfield Armory have been confined chiefly to the conversion of a small number of Springfield rifle-

muskets into breech-loaders for issue to troops, and to the States and colleges; to the manufacture of 22,000 Remington rifles for the Navy Department; and three or four kinds of experimental muskets and carbines, for comparative trial by troops in the field. Three of these systems have been put into the hands of the troops, and monthly reports are made to this Bureau upon them, as was directed by you on my endorsement of July 8, 1870, submitting the report of the Board of Officers of June 10, 1870, of which Major-General Schofield was president.

It is expected that sufficient information in regard to these experimental arms will be derived from troops using them to warrant the appointment, some time next summer, of the board which is to select and recommend to the War Department a breech-loading system for adoption for the military service. It is highly important that this board shall act as soon as possible upon the subject, and that a breech-loading system shall be adopted as soon as possible, and adhered to until a large number of breech-loaders can be made for the Government. Now there are less than 10,000 breech-loading muskets in the arsenals for issue. This number of muskets is not half sufficient to supply the States with the muskets they are now entitled to receive under their apportionment of the permanent appropriation for arming and equipping the militia. It is important that the arms of the States should be like those used by the Government, and I believe the States are anxious to get the same kind of arms.

For these reasons I have been anxious to furnish them, to the extent of the ability of the Department, and their credits, with arms like those our troops are armed with, and I have not been willing to encourage any State in getting any other arms. This Department should, as soon as possible, be placed in a condition to fill all proper requisitions by the States upon it, and should also have on hand in store a large number of breech-loading muskets and carbines to meet any emergency that may arise. Ten years ago the country felt that not less than a million of muskets should be kept in store in the arsenals. We are making very few arms at present, and for the reason that no breech-loading arm has yet been adopted for our military service.

The conflicting interests of inventors and holders of patents on breech-loading small arms have seriously embarrassed this Department in the selection of a system for adoption. It appears that there are patents (one or more) upon all breech-loading small arms, and it is not thought that any gun has been made, or can be made by the Government, upon which a claim for royalty will not be made against this Department. I have declined to give an opinion upon the validity of any patent which the Government may have used, or to recommend the allowance of royalty by the War Department on any small arms which have been made by the Government; and I shall continue to do so, believing that the amount of compensation, and the persons who may be entitled to receive it, should be determined elsewhere than in the War Department.

In my annual report for 1869, I said: "The chief difficulties which this Department had to contend against in producing a good breech-loading musket have arisen from the impossibility of making any improvement which is not immediately claimed under some one of the many patents which have been granted for improvements in fire-arms, and from the extreme eagerness and strong efforts of some inventors, and all other parties interested in patents, to have their improvements used by the Government. Many persons claim to hold patents for improvements which are used in the conversion of the Springfield muskets; in some instances several parties have claimed to hold patents for the same thing, and it is believed that every improvement is claimed by more than one inventor. The Bureau has declined to acknowledge the validity of any patent for improvements used in the conversion of the Springfield rifle musket, knowing that it was not competent for it to decide the question, and believing that the proper course for patentees to take was to establish satisfactorily the validity of their claims, and then apply to Congress for compensation for the use of the patents."

These difficulties have continued to embarrass this Department, and to affect injuriously the interests of the Government; and it is respectfully suggested whether a law may not be devised which, while affording protection to all inventors in the rights secured to them by patents, will enable the Government to use unrestrictedly any improvement which it may be desirable for it to use. I have no desire to see any inventor deprived of any of his rights, without just compensation; but I am so fully convinced that some law protecting the Government against improper claims of inventors and owners of patents should be passed, that I feel it my duty to bring the matter particularly to your notice, in the hope that something may be done to secure so desirable an end. Such a law would relieve this Department of much annoyance and embarrassment, and would tend, in my opinion, to increase to a considerable degree the efficiency of the public service.

It is respectfully suggested that a law be passed which will authorize officers in charge of public works to make use of all inventions, or improvements whatever, applicable to the work under their charge; and which will provide that when a claim for damages is made by any person for an invention or improvement so used, at least ten days' notice shall be given, requiring all parties claiming said invention or improvement to present their claims, with the evidence in support of the same, to some special tribunal authorized to try the same, whose duty it shall be to decide who is the party entitled to damages or remuneration, and to fix the amount which should be paid by the United States for the use of the invention or improvement; their decision to be final, so far as the United States are concerned; and the amount declared to be due from the United States to be paid out of the appropriation for which the work done is paid.

I repeat this, and earnestly ask that such legislation may be requested of Congress as may be necessary to secure the rights of inventors and owners of patents, and to protect those of the Government and its agents. These latter are not protected now. The commanding officer of Springfield Armory and myself have, for more than a year, been subjected to the annoyance of a suit brought against us personally for our official action in having arms made at Springfield Armory under the orders of the Secretary of War, and the Government has at the same time been compelled to submit to an expensive lawsuit brought to restrain it from making the arms. Such a state of things ought not to exist.

A small number of revolvers (pistols) which use the primed metallic cartridge have been made and issued to troops, and the few reports upon them which have been received at this Bureau show that they are greatly superior to the revolvers which use the paper cartridges, and must supersede them in the service. As soon as a proper model can be selected it should be adopted, and steps should be taken to make at the National Armory all of them which the Government may require. It will be more economical for the Government to pay a fair royalty and manufacture the revolvers than to purchase them from the manufacturer, who will charge both royalty and manufacturer's profit.

Benicia Arsenal has been for some years the principal and almost the only arsenal on the Pacific coast. A recent inspection has shown me that it should be made capable of doing all the necessary repairs of ordnance stores for the Pacific coast. The cost of transferring stores from the Pacific coast to arsenals on the Atlantic is so great that no stores should be sent east for repairs. My estimates for Benicia Arsenal have been made with a view to make it of sufficient capacity to do all the repairs of stores for the Pacific coast.

Since the date of my last report St. Louis Arsenal has been turned over to the Quartermaster's Department and converted into a cavalry recruiting depot; and Jefferson Barracks has, under your orders, been occupied as an arsenal. The transfer of the ordnance and ordnance stores from the arsenal to the barracks has been nearly completed. Jefferson Barracks is an excellent site for an arsenal, and its storehouses are capacious and in good order.

Baton Rouge Arsenal has also, in pursuance of orders, been turned over to the Quartermaster's Department for garrison purposes, and was finally closed as an arsenal on the 15th of June last. I respectfully renew my recommendation that the captured lands and buildings at Shreveport, Louisiana, and in Walker, Jefferson, Davis, and Marion counties, Texas, which were turned over to the Department at the close of the war, be disposed of. They are of no use to the Department.

I also renew my recommendation that the following arsenals, which are no longer needed by this Department, be sold, viz: Rome, at Rome, New York; North Carolina, at Fayetteville, North Carolina; and Champlain, at Vergennes, Vermont. As the Mount Vernon Arsenal, in Alabama, has been ordered to be transferred to the Quartermaster's Department for Army purposes since the date of my last report, my recommendation for its sale is withdrawn.

I recommend that Congress be requested to authorize the sale of the magazine tract of land near Augusta, Georgia. Extensive powder works were built upon it by the Confederate government during the war, which are not wanted by this Department. The buildings and machinery are deteriorating, and their care is an expense to the Department.

No payment, except for a few lots, has yet been made on the Harper's Ferry property which was sold in 1869, in accordance with the terms of the law directing the sale. The first payment should have been made last December, and the second and last payment should be made the 1st of next December. The title to the property has not been transferred by the United States, except for the few lots above referred to, and for those donated by the act authorizing the sale. Unless full payment for the property shall be made next December, it is my intention to report the fact to you and ask for instructions in the matter.

I still think that a large arsenal of construction and a powder and nitre depot should be established at some suitable points on the Atlantic coast, and I renew the recommendation made in my last report, that Congress be requested to authorize and empower the Secretary of War to sell such of the arsenals as in his opinion have ceased to be required, and to apply the proceeds of their sales to the purchase of sites and the erection thereon of buildings for the arsenal and the depot. I respectfully invite attention to the remarks on this subject which are in my last report.

#### PERSONNEL OF THE DEPARTMENT.

The number of enlisted men of ordnance has been reduced to four hundred and seventy-five. They are employed as guards, mechanics, and laborers, at the arsenals and at the Military Academy. The act to increase and fix the military establishment of the United States, approved July 28, 1866, gave to the Ordnance Department sixty-four officers and thirteen storekeepers, and the Department was kept up to that number until after the passage of the act approved March 8, 1869, prohibiting promotions and appointments in the staff corps, and which is still in force. Since that time vacancies have occurred which reduce the strength of the Department to fifty-two officers and twelve storekeepers; and of the fifty-two officers, two are on the staffs of general officers and four on duty at the Military Academy, leaving but forty-six officers available for duty in the Department.

So long as this law continues in force, no promotions nor appointments can be made in the Department, no matter how many vacancies may occur, for the same law which stopped appointments took from the President the power of attaching graduates of the Military Academy to the Department as second lieutenants by brevet—a power which he had held since the organization of the Department in 1838. In justice to the public service and to the officers of the Department, I earnestly request that Congress may be asked to change the act of March 8, 1869, which is referred to, so far as to permit promotions and appointments in the Ordnance Department to be made. The number of officers available for duty in the Department at this time is not sufficient for the proper performance of the duties which are entrusted to the Department, and the interest of the public service requires an increase. The duties of the Department have been in nowise reduced since the passage of the act of July 28, 1866. It is not recommended that any change in the law shall be made so far as it relates to ordnance storekeepers. Their position in the Department is anomalous, and no more appointments should be made, but the officers—many of whom are old, meritorious, and highly efficient—should be retained in service.

#### ARMING AND EQUIPPING THE MILITIA.

This duty belongs to the Ordnance Department, and during the past fiscal year the following stores have been issued to the States, viz:

- 43-inch rifle cannon, with carriages, caissons, harness, implements, and equipments.
- 6,874 Springfield breech-loading rifle-muskets, calibre .50.
- 291 Springfield cadet breech-loading rifle-muskets.
- 2,083 Springfield rifle muskets, calibre .58.
- 210 Spencer carbines.
- 5 revolvers.
- 100 cavalry sabres.
- 90 musicians' and non-commissioned officers' swords.
- 7,211 sets infantry accoutrements.
- 100 sets cavalry accoutrements.
- 100 sets horse equipments.
- 451,000 cartridges for small arms.
- 75 3-inch rifle projectiles.

The act of April 23, 1868, in pursuance of which these issues were made, appropriates the sum of \$200,000 annually for the purpose of arming and equipping the militia of the United States, and this sum, by direction of Congress, is annually divided among the States and Territories according to their representation in Congress. It is the practice of this Department to credit the States and Territories annually with their proportion of this appropriation, and to charge them with the money value of all issues made to them. The States which were not represented in Congress during the war of the rebellion, and subsequently, have not been credited with any part of the appropriation for the period they were unrepresented, but this part of the appropriation has not been applied to the quotas of the other States. It is for you, or perhaps more properly for Congress, to direct how this sum which has accrued, and which stands on the books of this office to the credit of the permanent appropriation, shall be applied—whether the States which were not represented in Congress shall be credited with their quotas, or whether their quotas shall be apportioned among the other States and Territories. Congress evidently intended, in 1868, when it made the permanent annual appropriation of \$200,000 for arming and equipping the militia of the United States, that they should be armed and equipped by the Government, and it is important and proper that they should be, and that States should be encouraged to depend upon the General Government for these supplies. If in 1868, when the population of the United States did not exceed eight millions, the sum of \$200,000 per annum for arming and equipping the militia of the United States seemed necessary, it can hardly be thought this sum is sufficient now, when the population has increased nearly five-fold; and the States are more desirous of obtaining arms for their militia for drill and instructions than they were in 1868.

Large sums of money were charged against some of the States for arms, etc., furnished by this department during the war, and other States, equally populous, had no charges made against them during the same period; and it seems to me highly probable that errors occurred in keeping the account with the States which do great injustice to some of them, but which this Bureau has no authority to correct. The principal, if not all, of the issues which were made to the States during the war were made to them for the maintenance of the Government and the preservation of the Union, and should have been charged, as arms and other stores issued to Volunteers, to the United States, and not to the States. If the errors can be corrected, they should be. In my opinion it would be fairer and juster to the States to credit them with all issues made to them during the war, and charged on their quotas for arming and equipping the militia, than to let the accounts stand as they now are on the books of this office. Some of the States are now charged with a greater sum than their annual quotas will amount to in half a century, and under a proper decision of the War Department no issues can be made to States which are charged with arms and other stores in excess of their quotas. I respectfully suggest that it may be proper to invite legislation on this subject.

#### SEA-COAST GUNS.

In January, 1867, a board composed of artillery, engineer and ordnance officers, was appointed by the Secretary of War to fix the armament for the fortifications. The board unanimously reported that 805 smooth-bore guns (20-inch, 15-inch and 13-inch), 810 rifle guns (10-inch and 12-inch), and 300 mortars (13-inch and 15-inch), would be required in addition to the guns which were then on hand, and recommended their procurement from time to time. The report was approved by the Secretary of War *ad interim*. Of the guns recommended by the board there were on hand at that time 120-inch smooth-bore, 236 15-inch smooth-bore, 59 18-inch mortars; and since that time about 25 15-inch guns have been procured by this Department, making the number about 320. There are no sea-coast rifle guns of the calibre recommended by the board on hand, and with my present knowledge I am unwilling to recommend the purchase of any rifle guns of the calibres recommended by the board for the armament of the fortifications. It is of the highest importance that we should have heavy rifle guns for the fortifications, and it can only be determined by actual experiment how, in what manner, and of what material they shall be made. The experiment must necessarily be costly, but the information to be derived from it will be worth more than tenfold its cost, and I earnestly recommend that authority to begin the experiment be asked of Congress. The principal nations of Europe, fully aware of the necessity of having heavy rifle guns for their coast defences, have spent millions in their experiments in search of a reliable rifle gun for coast defence. We have confined our experiments to the trial of one or two cast-iron rifles. The results obtained will not warrant me in recommending that any cast-iron rifle guns be procured for arming the forts. We must try some other material for heavy

\* Of this sum over \$340,000 is for arms and ammunition made for the Navy Department, and \$31,610 for settlement of war claims.  
† Of this sum only \$99,554 59 (under the appropriation for arming and equipping the militia) is now available, the balance having, under the act of July 13, 1870, passed from the control of this Department for current expenditures.



rifle guns. A plan submitted to the Department by a Dr. Woodbridge, of New York, by which the gun is made of brass and iron or steel wire, impressed me so favorably that I had a small gun, which had been made by the Navy Department, tested, and its strength and endurance were so great that I submitted the result to a board of officers, who recommended that a 12-inch rifle should be made on the plan and tested. The recommendation received the approval of the Secretary of War, who authorized the experiment, and the gun was ordered. The act of July 12, 1870, which took effect a few days before the order for the gun was given, stopped the experiment by withdrawing the money which was necessary for the experiment from the control of the War Department. I have estimated for funds for making the experiment, and I earnestly hope that it will be authorized by Congress. It ought to be made and without delay.

Our smooth-bore Hotchkiss guns are regarded as reliable and perfectly fit for service. I shall continue to recommend their purchase, but shall spare no efforts to improve the quality of the metal of which these guns are made. Great improvement has been made within the last few years in the quality of cast-iron for guns, and I believe that a still further improvement may be made by a change in the treatment of the metal in the furnace. I am having some experiments made to determine that question, and will submit the result of the experiments to you as soon as it is obtained.

A great improvement in powder for heavy guns has been made by us within the past few years by increasing the size of the grain and thereby reducing the rate of combustion, and it is thought that the powder may be still further improved. I am having some small cannons made for experiment, and when tried the results will be reported to you.

My estimate for the next fiscal year includes a large sum under ordnance and ordnance stores, which is intended to be used in altering the 10-inch and 16-inch gun-carriages which are now in service. When the 10 and 16-inch guns were adopted and introduced into the service, and iron carriages made for them, the charge of powder for the 10-inch gun was 14 pounds, and that for the 16-inch gun 60 pounds, and the carriages were made abundantly strong to withstand those charges. The charges have been increased to 20 pounds for the 10-inch gun, and to 100 pounds of powder for the 16-inch gun, and it has been found that their carriages must be modified to adapt them for the largely increased charges. The required alterations should be made at once.

Very respectfully, your obedient servant,  
A. B. DYER, Chief of Ordnance.  
The Secretary of War.

#### REPORT OF SECRETARY BOUTWELL.

THE Secretary of the Treasury, in his annual report, announces a reduction of the public debt of \$94,327,764 84; the total decrease in the public debt from March 1, 1869, to December 1, 1871, was \$277,211,892 16, and during the same period the annual interest charge has been reduced \$16,741,436 04. The revenues for the year 1871, and the receipts since the 1st of July last, show that the time has arrived when a considerable further reduction in taxes can be made and yet leave the Government in a position to pay \$50,000,000 annually of the principal debt, including the amount pledged through the sinking fund.

The net receipts for the fiscal year ending June 30, 1871, were as follows:

From customs.....	\$206,270,408 05
From internal revenue.....	143,098,153 63
From sales of public lands.....	2,384,646 68
From miscellaneous sources.....	31,566,736 53
<b>Total receipts.....</b>	<b>\$383,323,944 89</b>

The expenditures for the same period were:

For civil and miscellaneous purposes.....	\$69,488,710 97
For War Department.....	55,799,591 82
For Navy Department.....	19,431,027 21
For Indians.....	7,496,907 44
For pensions.....	34,443,894 88
For interest on the public debt.....	125,576,565 93

Total expenditures.....\$292,177,188 25  
\* Net amount after deducting \$8,280,093 13 repaid into the Treasury as proceeds of sales of ordnance, etc. The true expenditures were \$41,090,084 00.

The receipts and expenditures for the fiscal year ending June 30, 1873, are estimated as follows:

Receipts from customs.....	\$212,000,000
From internal revenue.....	126,000,000
From sales of public lands.....	3,000,000
From miscellaneous sources.....	18,000,000

<b>Total receipts for the fiscal year 1872.....</b>	<b>\$359,000,000</b>
Expenditures—Legislative establishment.....	\$3,431,812 40
Executive establishment.....	17,445,831 38
Judicial establishment.....	3,383,350 00
Military establishment.....	31,432,509 88
Naval establishment.....	18,946,098 95
Indian affairs.....	5,445,617 97
Pensions.....	30,489,000 00
Public works, under Treasury Department.....	3,104,500 00
Public works, under Interior Department.....	244,800 00
Public works, under War Department.....	14,609,662 97
Public works, under Navy Department.....	1,483,100 00
Public works, under Agricultural Department.....	26,500 00

<b>Total.....</b>	<b>\$19,468,562 97</b>
Postal service.....	\$5,474,001 00
Miscellaneous.....	11,358,325 44
Permanent appropriations.....	126,781,974 00
Sinking Fund.....	22,895,930 00
Interest upon capital, Sinking Fund.....	5,783,333 00

Total expenditure for fiscal year 1872.....\$301,705,036 99

On the subject of Coast Survey and life-saving apparatus, public hospitals, and the Revenue Marine Service, and our internal commerce, the Secretary gives us the following information:

Under an act passed at the last session of Congress, appropriating \$300,000 for the purpose of more effectually securing life and property on the coasts of New Jersey and Long Island, a careful examination of the coast and of the life-saving stations has been made by experienced officers of the revenue service. In accordance with their report, proposals were invited and accepted for the erection of fourteen new houses on the coast of New Jersey and six upon the coast of Long Island. Repairs are also making upon the old houses on the Long Island coast. The operations of the Coast Survey, which are under the administrative direction of this department, have been prosecuted with the usual energy.

The survey of the Atlantic coast is now rapidly approaching completion; that of the Gulf coast is more than half finished, and the work on the Pacific coast is being pressed forward vigorously.

The estimates submitted substantially conform to the appropriations for the present year. An increase is asked for the item of extending the triangulation across the country to the Pacific Ocean, great interest having been manifested by the authorities of the States traversed in the prosecution of the work. The business entrusted to the Light-house Board is one of the most important branches of the public service in the control of this department, and I am able to state that it is conducted with

fidelity and with reference solely to the maritime interests of the country. The estimates made by the Light-house Board exceed the appropriations for the present year, but they appear to be necessary, and I respectfully recommend them to the consideration of Congress.

Under an act of Congress approved July 30, 1870, Dr. John M. Woodworth has been appointed supervising surgeon of the Marine Hospital service. His administration is satisfactory to the department. The average number of hospital patients for the fiscal year ending June 30, 1870, was 1,016, and for the year ending June 30, 1871, 1,138. The total cost of the service for the first named year was \$405,624, being an average for each patient of \$1 09 per day, and for the latter year \$453,082 42 or an average of \$1 04 per day. In the first named year the hospital tax was \$153 70, and in the latter year it amounted to \$293,502 14. The supervising surgeon is of opinion that pavilion hospitals are better adapted to the successful treatment of the sick than the ordinary buildings of brick and stone, while the expenses are only one-fourth as great. In accordance with his suggestion I recommend an appropriation of \$50,000 for the purchase of land and the construction of a pavilion hospital at Pittsburg, Pa. The present hospital is situated in the vicinity of iron mills and railways, and as it can be sold for about seventy thousand dollars the Government will be fully reimbursed for the cost of a new hospital, while the comfort of the patients will be promoted. An estimate has been made that the sum of \$50,000 will be sufficient for the construction of a pavilion hospital on Angel Island in the Bay of San Francisco, sufficient to accommodate 150 patients, and I also recommend an appropriation of that amount for that purpose. I also respectfully renew the recommendation made heretofore for a pavilion hospital near the city of New York, sufficient for the accommodation of 200 patients.

The Revenue Marine Service employs twenty-five steam vessels and eight sailing vessels. In addition to these there are two large steamers upon the lakes not in commission, and two schooners upon the coast condemned as not fit for duty. Of the six large steamers upon the lakes four only are in commission, and as the others are not needed I have the honor to recommend that authority be given for their sale. During the last year four iron steamers have been built—three of 250 and one of 350 tons burden. Under the existing appropriation of \$300,000 the department is about to issue proposals for four small iron propellers, two for the Pacific and two for the Atlantic coast. A further appropriation of \$200,000 is needed to enable the department to carry into effect the recommendation of the commission, whose report was approved by the department and submitted to Congress May 26, 1870. The plan recommended by the commission, when fully adopted, will effect a reduction in the expenses of this branch of the service of about \$500,000, or about 34 per cent. of the whole cost. The changes proposed contemplate the use of vessels of less tonnage, and a consequent reduction of the number of men employed.

The expenses of the revenue marine service for the year ending June 30, 1871, were \$1,251,984 52, against \$1,138,393 31 for the preceding year. The first quarter of the present fiscal year shows a reduction in expenses of \$83,201 42 as compared with the corresponding period of the preceding year. At the date of my last report a board of officers was in session charged with the duty of examining the officers then in active service. The report showed that five captains, ten first lieutenants, nine second lieutenants, and ten third lieutenants were not qualified for duty. The persons found to be incompetent have been discharged. Their places have been filled by promotion and by the appointment of additional officers, after a competitive examination. There are several officers in the service who, on account of age, are unfit for active duty. For the supply of officers in their places, and for the increase of the number of engineers, rendered necessary by the substitution of steam for sailing vessels, additional appropriations are required for the next fiscal year. This branch of the public service is, upon the whole, in a satisfactory condition.

Returns for the fiscal year 1870-71 show that the ocean commerce of the United States is passing rapidly into the hands of foreign merchants and shipbuilders. In the year 1860 nearly seventy-one per cent. of the foreign commerce of the country was in American ships. In 1864 it had fallen to forty-six per cent., in 1868 to forty-four per cent., and in 1871 it is reported at less than thirty-eight per cent. The loss of the shipping of the United States is due chiefly to two causes—first, the destruction of American vessels by rebel cruisers during the war; and secondly, the substitution of iron steamships for the transportation of freight and passengers upon the ocean in place of sailing vessels and steamships built of wood.

When the war opened English builders of steamships had acquired considerable proficiency, and since that period the art has been carried to higher perfection in Great Britain than in any other part of the world. It is stated that the superiority of British machinery and knowledge of the business by British mechanics give an advantage over American shipbuilders equal at least to ten per cent. upon the cost of construction. They possess additional advantages in the cost of labor, the cost of iron, coal, and other materials, and in the rate of interest upon the capital employed, equal in all to about twenty per cent. more, so that the difference in favor of British shipbuilders is at least thirty per cent.

After careful consideration of the whole subject, I am prepared to advise the passage of a law guaranteeing to persons who may employ in the foreign trade American-built first-class iron steamships of not less than two thousand tons burden each an annual payment for the period of five years of the sum of thirteen dollars per ton. The subsidy should be proportionately less to vessels of lower classification. In making this recommendation I do not assume that there is no other practicable method of restoring our commerce, but I present it as the method which appears to me to be the most efficient and economical. Connected with this plan it will be wise to consider whether the ships may not be so con-

structed as to be available for naval purposes, and, in case of war, subject to the right of the United States to take them upon payment of their appraised value. A similar suggestion was made by the Secretary of the Navy in his report for the year 1869. They should also be required to carry the mails on moderate terms or in consideration of the subsidy. The use of sailing vessels and steamers built of wood may be continued successfully in the coasting trade, the trade with the British possessions, and upon the rivers and lakes of the country; but any effort to regain our former position upon the ocean by their agency must end disastrously.

#### GOVERNOR PALMER AND GENERAL SHERIDAN.

GOVERNOR PALMER, of Illinois, has sent a long special message to the Legislature of Illinois, embodying the correspondence between himself and the President with reference to the employment of United States troops to preserve the peace in Chicago during and after the great fire there. In his first letter, dated November 3, the Governor calls upon the President to inform him "whether the troops ordered to Chicago are intended or instructed to obey the call of any authorities of the State of Illinois, or the city of Chicago, or in any way whatever to assume the protection either of property, or the preservation of order in that city?"

In reply, the President, Nov. 9, forwarded the proclamation of Mayor Mason entrusting the preservation of order in Chicago to General Sheridan, the orders of General Sheridan carrying the Mayor's wishes into effect and his subsequent orders withdrawing his military force in answer to the Mayor's request, the letter of the Mayor thanking him for his aid, and a letter from the members of the Chicago Relief and Aid Society calling upon him again for help, and finally General Sheridan's report to Washington, and the endorsement of General Sherman and the Secretary of War approving his course. In his letter transmitting these documents, the President said, in relation to the action of the Government at Chicago: "The only thing thought of was how to benefit a people stricken by a calamity greater than had ever befallen a community of the same number before in this country. The aid was of a like nature with that given in any emergency requiring immediate action. No reflections were contemplated or thought of affecting the integrity or ability of any State officer or city official, within the limits of the State of Illinois, to perform his whole duty."

This did not satisfy the Governor; and in a letter in reply, dated November 20, he complains that he fails to find in the papers transmitted to him "anything to justify the extraordinary measures of ordering four companies of United States troops into this State to report to Lieutenant-General Sheridan, to act as police under his orders," and proceeds to argue at length as to relative powers and provinces of the State and Federal Governments. To this the President briefly replied that he had instructed General Sheridan to rescind any orders given to his troops "which in any way conflict with the provisions of the Constitution or the laws of the State of Illinois."

In his message transmitting these documents to the Legislature, Governor Palmer says:

It seems to me, from the letters of the President and the papers laid before the General Assembly, that General Sherman and Lieutenant-General Sheridan entertain the belief that, under our system of Government, it is a part of the duty of the officers of the Army of the United States to superintend the administration of the local governments, and that, if they are not satisfied with the measure of protection afforded by the States to the person and property of their own citizens, the officers of the Army have the right, at their own discretion, to introduce a part of the Army, and through its agency afford such additional protection to the people as they may think necessary or proper, and that their right to interpose for that purpose does not depend upon the ability of the States to discharge their duties. There is no other ground upon which the conduct of Generals Sherman and Sheridan can be placed. No one will pretend that the State of Illinois is not able to enforce its own laws, and protect every person and all the property within its limits; but General Sheridan, in the exercise of his superintendence of its affairs, was not satisfied with the provisions made by the State for the safety of property, and the control of what he is pleased to call "the turbulent element" of Chicago, and he therefore informed the Adjutant-General that "I am satisfied of the necessity of their (four companies of Infantry) presence here, and ask the authority of the Secretary of War to bring them;" and General Sherman, acting upon the same principle, promptly informed him by telegraph that "four companies of the Eighth Infantry are ordered to Chicago to act as police, under your letter of the 29th."

The President, it is true, in his letter to me of the 9th of November, informed me "that the only thing thought of in ordering these troops to Chicago, was how to benefit a people stricken by a calamity greater than had ever befallen a community of the same number before in this country. The aid was of a like nature with that given on any emergency requiring immediate action." It is to be remembered that Chicago is a part of one of the most wealthy and powerful States in the Union, that the State Government is in full vigor, and its laws every-



where enforced, and that its resources are ample for the discharge of all its duties. It will surprise no one, then, that I protest that no emergency has existed at any time in the history of the State of Illinois for which it was unable to provide, and nothing in the Constitution or the laws to give the President or his military subordinates the right to determine when it is necessary or proper for the authorities of the United States to interfere in the internal affairs of the States. I also deny that the officers of the Army have the right to determine the measure of the duties of any civil officer, under any circumstances whatever, or that their powers are increased by any emergency that can possibly happen in the affairs of any State. They are not, as they seem to suppose, the natural rulers of the people under circumstances of difficulty and danger, but they are, at all times, the inferiors of the humblest officer created to execute the laws of the land. I cannot expect that Lieutenant-General Sheridan will accept this as the proper estimate of his official powers; for whatever concessions he may have on some occasions made to the imaginary authority of the Mayor of Chicago in his correspondence with the War Department, he has in every instance spoken of himself as acting in his military character, and his orders for the government of Chicago emanated from his headquarters, and are signed by the proper officers of his military staff.

And the General commanding the Army seems also to have fallen into the dangerous error of supposing that his official military powers are paramount to the Constitution and the laws. He endorsed upon the report made by Lieutenant-General Sheridan, of his operations while enforcing military rule in Chicago, his approval of all the acts of his subordinate, and that, too, with an emphasis that, he seems to have supposed, will preclude all question of the propriety of his conduct; and on the 31st of October, when the same officer applied to him for leave to bring other troops to Chicago, he not only responded favorably to his wishes, but informed him that the troops were to act as police.

It is due to the dignity of the people of the State that I should say that I cannot consent that the grave and important subjects that I have urged upon the attention of the President shall be decided by an officer of the Army; but I must hereafter, as I have done in the past, protest against all interference by the officers of the Army in the affairs of this State. I must protest against such interference, because it will establish a precedent dangerous to liberty; because it familiarizes the people with military rule and inspires them with distrust of the capability of civil government to afford them needful protection; and it is now for the representatives of the free people of the State to discharge their duties according to their own convictions and subject to their own responsibilities.

## THE NAVY.

The Editor invites for this department of the JOURNAL all facts of interest to the Navy, especially such as relate to the movements of officers or vessels.

### VARIOUS NAVAL MATTERS.

The United States steamer *Kansas* arrived at Havana from New York, on December 6.

On Saturday, December 9, a reduction of the force in the department of yards and docks at the Washington Navy-yard was made by order of the commandant, Rear-Admiral Goldsborough, by placing many of the men in this department upon one-half, one-third, and two-thirds time, and suspending others.

SECRETARY Robeson, December 6, opened bids for building a floating iron dock, intended for the repair of naval vessels on their stations. About half a dozen bids were received, some of them being from the North and West. The Secretary reserved his decision. The successful bidder will be required to give security in trust for \$600,000 for the faithful performance of his duty.

On the 22d of November the flagship *Brooklyn* was at Naples, also the *Wachusett* and *Saco*. The *Plymouth* is at Civita Vecchia, the *Guerriere* at Cadix, and the *Shenandoah* at Nice. The *Wachusett* will sail on the 28th for Palermo and afterward visit Messina and Genoa. All the fleet will rendezvous at Nice in the latter part of December, to be assigned under Admiral Alden, who will relieve Rear-Admiral Boggs.

The United States steamer *Nantasket* arrived at St. Thomas, December 1, from Porto Rico, and Captain Carpenter held a conference with the captain of the Spanish man-of-war, who disclaimed any intention of molesting the reputed filibuster steamer *Florida*, except to prevent her from approaching the coasts of Porto Rico or Cuba. The *Nantasket* sailed from Samana bay November 20, leaving the *Florida* and the Spanish man-of-war in port.

ADMIRAL Porter has approved a proposition of Medical Director Ninian Pinkney, of the Navy, to dispose of the naval asylum at Philadelphia, and to establish a national naval hospital and medical school at Annapolis on the ground opposite the Naval Academy. He wants every candidate for the position of assistant surgeon placed at this school after having passed his examination, at least four months before he is ordered to sea, and again after one cruise, before he is examined for promotion.

The Legislature of Connecticut appointed a committee at its last session to induce the location of the Navy-yard at New London. The Secretary of the Navy, in response to this committee, sent several monitors and some men-of-war to lie up at that harbor for the purpose of investigating its eligibility as a site for the Navy-yard. The vessels were prevented from entering the river on Thursday, December 6, by the heavy ice between New London and Norwich; and this untoward accident has afflicted the people of New London with deep gloom, because of hope deferred.

The following nominations in the Navy have been sent to the Senate: Christopher R. P. Rodgers, to be

chief of the Bureau of Yards and Docks; Daniel Ammen, chief of the Bureau of Navigation; Jonathan M. Foltz, chief of the Bureau of Medicine and Surgery; Master Edward Woodman, to be lieutenant. The following lieutenant-commanders to be commanders: W. N. Allen, Nathaniel Green, J. N. Quackenbush, and T. H. Eastman. Commanders to be captains: H. C. Blake, C. H. Wells, S. P. Quackenbush, and Earl English. Captains to be commodores: M. B. Woolsey, Alexander Murray, and Edward Donaldson. Commodores to be rear-admirals: Charles Steedman and James Alden.

NOTICES 100 to 116 from the Lighthouse Board report the following changes in American lights: The light at the entrance to the Bridgeport harbor, Connecticut, has been rebuilt 250 feet southwest of the old light, and fitted with a fixed red light and a lens of the 4th order and a fog bell struck by machinery every 15 seconds during foggy and thick weather. Fixed red lights have been established at Middle Bunch, Colchester Reef, Lake Champlain, and at Long Branch bar, entrance to Orient and Greenport harbors, Long Island, with lenses of the 5th order; a fixed white light at Pumbam Rock, Providence river, Rhode Island, with a lens of the 6th order; and a revolving red light of the 4th order on the system of Fresnel from the tower recently erected at Trinidad Head, California. A fog trumpet (Daboll's) has been established at Portland Head light-station, Maine, and the fog bell at Boston light-house has been replaced by an air trumpet. The iron bell-boat at the entrance to Penobscot river, Maine, has been repaired and restored to its position. From abroad information has been received of the following changes: The buoys in Prince's Channel entrance of the river Thames have been moved; the buoys on Ryde Middle Shoal, Spithead, south coast of England, have been changed in color; Inishowen lights, Lough Foyle, west coast of Ireland, has been altered to fixed white lights; and eleven fixed lights have been established for vessels navigating the upper part of the estuaries of the river Shannon, below Limerick; a fixed white light is now exhibited on Cape Jervis, St. Vincent Gulf, South Australia; the harbor of Bona Algeria is now lighted by four harbor lights; beacons have been placed on Boghaz or Central Pass, Alexandria; and a fixed light has been placed at Matsuwonohana, the north point of Awadji Island, Akasi Strait. Fixed harbor lights have been established at Levuka, Ovalou Island, and temporary fixed lights placed on Wada Misaki, and on Temposan fort at the mouth of Agi Rawa, Gulf of Oosaka, Hiogo. A fixed white light has been established at Accra, west coast of Africa. The following signals have been established at Port Said: A vessel in the road exhibiting lights at the foremast head followed either by rockets, blue lights, or a gun, is the signal that she requires a pilot to enter the port. The above will be thus answered from the harbor office: If by a rocket, pilot is going to you. If by a blue light, pilot cannot go off to you.

The bill "to reorganize and reduce the staff of the Army, to secure the more prompt settlement of disbursing officers' accounts, and to prevent defalcations," is as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That on and after the passage of this act, the offices of the Adjutant-General, Paymaster-General, Surgeon-General, Commissary-General, Chief of Ordnance, and Judge-Advocate-General of the Army be abolished.

SEC. 2. That the Paymaster's Department, the Subsistence Department, and the Quartermaster-General's Department be consolidated into one staff corps, and to be under the direction of a chief quartermaster, with the rank and salary of brigadier-general.

SEC. 3. That hereafter the Quartermaster-General's Department shall consist of one Quartermaster-General, six colonels, six lieutenant-colonels, twelve majors, and as many captains as there are regiments in the Army, to be appointed by the President and confirmed by the Senate, on the recommendation of the Quartermaster-General.

SEC. 4. That the Ordnance Department and the five regiments of artillery as constituted by existing laws shall be consolidated and form one Artillery and Ordnance Corps under regimental organization; and that each regiment shall consist of one colonel, one lieutenant-colonel, three majors, fifteen captains, twenty-four first lieutenants and twenty-four second lieutenants, so that two majors, three captains, twelve first and twelve second lieutenants of each regiment may at all times be detachable for duty in the arsenals and armories of construction and repair, and that the further organization continue in force under existing regimental constitution as now provided by law without being impaired by this act.

SEC. 5. That the chief of the Engineer Corps of the Army shall be charged with the fabrication and purchase of all heavy siege and fortification guns, their shot and shell and armament, and the disbursement and accountability of all moneys appropriated for such ordnance, under such new regulations for disbursement of moneys and prompt settlement of his accounts as shall show monthly to the Secretary of War the amount of moneys paid out and the balance on hand of the appropriations for ordnance supplies.

SEC. 6. That hereafter the Inspector-General's Department of the Army shall consist of one colonel, eight lieutenant-colonels, and twenty majors, to be appointed by the President by selection of officers from all branches of the Army, highest character and fitness for the special and confidential duties of this branch of the service only considered.

SEC. 7. That hereafter the duties of adjutant-generals and assistant adjutant-generals shall be performed by officers selected from the regiments or staff of the Army by the generals and commanders with whom they are to serve; and while actually in the performance of such duties they shall be entitled to the salary allowed by existing laws to the respective grades of adjutant-generals and assistant adjutant-generals allowed to such generals and commanders.

SEC. 8. That the military direction and command of all the staff departments and corps of the Army shall vest in the general commanding, under such orders and regulations as he shall establish, with the President's approval.

SEC. 9. That the administration and accountability of all the staff departments and corps of the Army shall continue under the control and direction of the Secretary of War, under such new and revised regulations as he may make, with the approval of the President, to insure a more prompt settlement of all disbursing officers' accounts, and to prevent misappropriation of moneys or property, embezzlement, and frauds.

SEC. 10. That the officers of Ordnance, the Pay Department, the Subsistence Department, and the Adjutant-General's Department, who may become supernumerary by the operation of this act, shall be entitled to all the benefits of existing laws for partially or wholly retiring from active service in the Army, officers on account of disabilities, age, length of service, or sickness and disease contracted in the line of duty.

SEC. 11. That any officer who shall become supernumerary by operation of this law may be discharged from the Army by the President, with one year's full salary, on the tender of his resignation at any date within one year from the taking effect of this act.

SEC. 12. That, at the discretion of the President in executing this reduction and consolidation, he may transfer officers of the regiments of artillery or of the Quartermaster's Department to the supernumerary list and fill their places with officers from the Pay, Subsistence, or Ordnance Department or any regiments of the

Army, regard being had to relative rank, fitness, and distinction in service.

SEC. 13. That on the execution of this law, the separate organization of the Adjutant-General, Subsistence, and Pay Departments, and the Ordnance Corps, will be considered as abolished, and all existing laws and parts of laws creating them are hereby repealed.

SEC. 14. That the act of Congress approved March 3, 1869, creating the office of Surgeon-General of the Army, with the rank and pay of brigadier-general, and the act approved March 3, 1869, creating the office of Judge-Advocate-General of the Army, with the rank and pay of brigadier-general, are so far amended as to fix the rank and pay of each, respectively, as colonel; but otherwise those acts remain in full force.

## NAVY GAZETTE.

### REGULAR NAVAL SERVICE.

#### ORDERED.

DECEMBER 6.—Passed Assistant Paymaster Charles W. Stamm, to the *Iroquois*.

Assistant Paymaster Nicholas H. Stavey, as assistant to the paymaster at the Navy-yard, Boston.

DECEMBER 8.—Chief Engineer John Johnson, to the Navy-yard, Boston, in charge of stores.

Chief Engineer Edwin Fithian, to the Navy-yard, Washington, D. C.

Boatswain John A. Selmer, to the Naval Station, New London, Conn.

DECEMBER 9.—Lieutenant-Commander George W. Sumner, to the Hydrographic Office, Washington, D. C.

DECEMBER 11.—Lieutenant-Commander G. K. Haswell, to equipment duty at the Navy-yard, Norfolk, Va.

DECEMBER 12.—Captain Egbert Thompson, to command the *Canandaigua* on the 3d of January.

#### DETACHED.

DECEMBER 6.—Paymaster Henry M. Meade, from the *Iroquois*, and ordered to settle accounts.

DECEMBER 9.—Captain Paul Shirley, as chief of staff of Pacific Fleet, and placed on waiting orders.

DECEMBER 11.—Master B. S. Richards, from the Navy-yard, Norfolk, and ordered to the receiving ship *New Hampshire*.

Midshipmen Henry H. Barroll, Sidney A. Staunton, Pertin Babcock and Wm. H. Slack, from the *Iroquois*, and ordered to the Congress.

Surgeon W. K. Schofield, from the Naval Hospital, New York, and ordered to the receiving ship *Vermont*.

DECEMBER 12.—Commander Thomas O. Selfridge, from special duty connected with Darien Expedition, and ordered as Light-house Inspector of the First District.

Commander A. E. K. Benham, as Light-house Inspector of the First District, and to be ready for sea service.

#### RESIGNED.

DECEMBER 8.—Lieutenant Rufus Waterman, Jr.

#### LIST OF DEATHS.

In the Navy of the United States, which have been reported to the Chief of the Bureau of Medicine and Surgery for the week ending December 9, 1871:

James Sheridan, first assistant engineer, November 24, at Brooklyn, N. Y.

James Riley, seaman, November 27, Naval Hospital, Philadelphia.

#### CHANGES IN THE MARINE CORPS.

The following are the changes in the officers of the Marine Corps since last memoranda, viz.:

#### DECEMBER 4.

Second Lieutenant John D. Smyser.—By direction of the Navy Department, detached from Brooklyn, N. Y. Barracks, and ordered to duty at Marine Barracks, Philadelphia, Pa.

#### DECEMBER 6.

Major James Lewis.—Granted leave of absence for one month from 15th inst.

#### DECEMBER 11.

First Lieutenant Israel H. Washburn.—Granted leave of absence for thirty days from 25th inst.

### NAVAL VESSELS IN ACTIVE SERVICE.

ASIATIC FLEET, REAR-ADMIRAL JOHN RODGERS. Address, Yokohama, Japan.

Colorado, flagship, first rate (45), at Yokohama, October 10.

Alaska, third rate (12), at Nagasaki, October 10.

Bencica, third rate (12), at Shanghai, October 10.

Ashuelot, fifth rate (6), at Shanghai, August 20.

Monocacy, fifth rate (6), at Shanghai, October 10.

Saco, fifth rate (3), en route through Suez Canal.

Idaho (7), at Yokohama, October 10.

Palos (6), at New Chiang, October 10.

ATLANTIC FLEET, NORTH, REAR-ADMIRAL S. P. LEE. Address, Key West, Fla.

Sovern, flagship, second rate (15), at New York.

Nipsic, fourth rate (3), Pensacola, November 21.

Nantasket, fourth rate (7), at St. Thomas Dec. 1.

Swatara, fourth rate (7), at Norfolk, November 6.

Shawmut, fifth rate (3).

Kansas, fifth rate (3), at Havana, Dec. 6.

Portsmouth, fifth rate (15), at New York.

Terror, iron-clad (4), arrived at Havana Dec. 2.

Pawnee (2), storeship, Key West.

ATLANTIC FLEET, SOUTH, REAR-ADMIRAL JOSEPH LANMAN. Address, Rio de Janeiro, Brazil.

Lancaster, flagship, second rate (22), en route to Santos, September 27.

Wasp, fifth rate (1), at Montevideo, September 9.

Tico deroga, third rate (10), at Montevideo, October 8.

PACIFIC FLEET, REAR-ADMIRAL JOHN A. WINSLOW. Address, Mare Island, San Francisco, Cal.

California, flagship, first rate (21), sailed for Honolulu Nov. 28.

Pensacola, second rate (22), at Mare Island, fitting.

Oasipoo, third rate (8), at Valparaiso.

Saranac, third rate (11), at Magdalena Bay.

Mohican, fourth rate (6), at San Francisco.

Rosaca, fourth rate (7), at Guayaquil.

Narragansett (5), sailed for Honolulu November 28.

Cyane, fifth rate (14), at San Francisco.

Jamestown, fifth rate (16), at Mare Island.

Nyack, fifth rate (3).

St. Mary's, fifth rate (16), cruising South Pacific Islands, etc.

Onward (3), Callao.

EUROPEAN FLEET, REAR-ADMIRAL JAMES ALDEN. Address, care B. F. Stevens, 17 Henrietta St., London, England.

Wabash, flagship, first rate (46), en route out; left New York November 17.

Guerriere, first rate (21), at Cadix, Nov. 22.

Brooklyn, temporary flagship, second rate (20), at Naples, Nov. 22.

Junata, third rate (8), at Gibraltar, November 11.

Plymouth, third rate (12), at Civita Vecchia, November 22.

Shenandoah, third rate (11), at Nice, November 22.

Wachusett, fourth rate (6), at Naples, November 22.

#### ON THE LAKES, ETC., PA.

Michigan, fifth rate (8).

#### WAITING ORDERS, FITTING, OR REPAIRING.

At Boston—Worcester, second rate (16); Wyoming, fourth rate (6); Sabine, first rate (36).

At Mare Island—Lackawanna, third rate (10); Dacotah, fourth rate (7); Keewauque, fourth rate (6).

At New York—Hartford, second rate (18); Canandaigua, third rate (10); Supply, storeship (2). On Special Service—Congress, second rate (16); Iroquois, fourth rate (8); Tallapoosa.

At Norfolk—Quinnabaug, fifth rate (7); Yantic, fifth rate (3); At Philadelphia—Omaha, third rate (12).

At Portsmouth—Monongahela, third rate (10).



## CORRESPONDENCE.

## EXTRA LIEUTENANTS.

To the Editor of the Army and Navy Journal.

SIR: Among the recommendations embraced in the annual report of the Secretary of War, there is one at least which must strike all regimental officers, field, staff and line, as being, to say the least, ill advised. It is as follows:

I recommend that the extra lieutenants now authorized by law to serve as regimental adjutants and quartermasters in the artillery, cavalry, and infantry regiments, as provided by sections 2, 3 and 4 of the act of July 23, 1866, be discontinued as vacancies occur in those grades. This would effect an ultimate reduction of eighty lieutenants; would result in a yearly saving, if the reduction should be completed, of nearly \$160,000, and would be of no detriment to the service.

The Hon. Secretary might have added what he evidently intended, that the places thus made vacant should be filled by temporary assignments of two lieutenants from companies. The recommendation either goes too far or it is not extensive enough. If it is true, though the sentiment of those most intimately acquainted with the wants of the service will hardly admit it, that there is no necessity for maintaining the grades of regimental adjutant and quartermaster separate and distinct, and that two lieutenants can be spared from their companies to perform the regimental staff duty, the rule might and should be more comprehensive, and a much greater "yearly saving" be accomplished. For, reasoning upon the fact that the average wants of each company in the service are the same, it follows that if there are two companies in each regiment which can without detriment to the service dispense with one lieutenant each, there is no apparent reason why the remaining companies of the regiment should not be able to do likewise, leaving each company with one captain and one lieutenant, thereby resulting in a "yearly saving" of more than three quarters of a million of dollars instead of the comparatively paltry sum of \$160,000 as mentioned in the above extract.

Why not save the larger sum if the same course of reasoning will justify it. If the smaller sum is desirable, and can be made to appear under the circumstances proper or beneficial, the larger becomes the more desirable in proportion to the relative amounts, and under this view of the case the recommendation of the Hon. Secretary falls short of what it might accomplish upon its own principle. If the permanent removal of one lieutenant from each troop, battery and company "would be of no detriment to the service"—and such in effect is the extended meaning of the recommendation—why continue so many useless appendages of the service? If, as years of valuable experience has proved, each company of troops (not including in this remark the artillery, which requires even a greater number) requires one captain, one first lieutenant and one second lieutenant, then the recommendation of the Hon. Secretary, which contemplates the reduction of this number to the extent stated, goes too far. If one company can spare its first or second lieutenant, it is but fair to presume that the rule can be made general.

What are the facts which bear on this point. I will only refer to the condition and wants of my own arm of the service, the cavalry. I am confident that if the opinion of officers of experience and judgment in the cavalry could be obtained, it would be united in favor of increasing the number of lieutenants in each troop rather than reducing it. So much of the duty performed by cavalry is detailed service in small bodies, that it is often difficult to supply officers for each occasion, and detachments requiring the presence of an officer have frequently to be sent in charge of non-commissioned officers. Under our present system it is impossible to avoid detaching a greater or lesser number of line officers from their companies. Details upon staff, courts-martial and other duty necessarily tends to reduce the complement of line officers. In my regiment this is so much the case that of the twelve companies there is but one with which the captain and both lieutenants are on duty. There is less than an average of two officers to each company. This might be accepted as a proof of the correctness of the recommendation to detail the adjutant and quartermaster from the company officers, because company officers are thus detailed. The argument would hold good if it could be further established that such details are of "no detriment to the service." But no officer cognizant of the facts and the usual results attending such details, but will assert that in almost all cases when an officer is detailed from his company there is serious "detriment to the service" so far as the company is concerned, while in the vast majority of instances the interests of the officer are more or less prejudiced by such details. It is generally admitted that the proper place for a line officer to establish a reputation of which he may be proud is with his company, and few officers departing from this maxim but have cause sooner or later to regret it.

How will the interests of the service generally be served by abolishing the grades of adjutant and regimental quartermaster? The officers filling these important stations should feel permanent in these places; this of itself would inspire greater zeal and efficiency. Thus, if the detail is a temporary one, no matter how capable or earnest these officers may be, it requires a long course of experience and application to the duties to properly fit them for their performance. By making their appointments, as they now are, somewhat of a permanent character, they feel called upon to acquaint themselves with these duties. It also gives a dignity and authority to their respective official positions, which a temporary detail from a company could not carry with it. If an office of detail, the result would be many changes—a thing to be greatly avoided. A frequent change of commanding officers would not, in my opinion, produce more evil results than a frequent change of adjutants. Records would suffer in their accuracy as well as in their promptness of preparation.

If the colonel of the regiment becomes detached, or avails himself of a leave of absence, he returns to find

that the lieutenant-colonel or other officer who temporarily succeeded him in command, being dissatisfied with the staff details made by the colonel, has relieved the latter from the temporary duty upon which they have been serving, and ordered them to their respective companies, substituting in their stead his particular favorites, or those whom he thinks best fitted to discharge the duties of the regimental staff.

It is easy to picture the many bad results which would necessarily follow such a course. The question of preserving the positions of adjutant and regimental quartermaster as they now exist, rather than making them appointments of a temporary character from company lieutenants, is one in which all regimental officers are deeply interested—the interest, as I believe, tending strongly in favor of the present system. The staff should be and is most generally the pride of the regiment. To it is largely due the healthy growth of a proper tone in the corps. True, the commanding officer has his duties and responsibilities; next to him, however, no head officers exercise or should exercise greater influence in establishing the social and official standing of the regiment than the regimental staff. This remark applies more particularly to the adjutant. To invest these appointments, therefore, with the dignity and high excellence which now attaches to them, and to give the regimental staff their influence and weight with the regiment which the position entitles them to, these grades should remain separate and distinct, as they now exist. The attainment of these important stations will then be objects of greater reward, more eagerly sought by the lieutenants, than if the appointment is merely a temporary detail, made from the companies and changed according to the caprice of each succeeding commanding officer. It would be less hurtful to the efficiency and *esprit de corps* of a regiment to make the position of captain or company commander a matter of detail, and consequent frequent change, than to inaugurate a system similarly affecting the regimental staff.

I am well aware how important the question of economy becomes in administering the affairs of the Government, but it seems to me that in doing away with the positions of adjutant and regimental quartermaster, and substituting detailed officers, it is not only robbing Peter to pay Paul, but it is practising that kind of economy which comes under the head of "penny wise and pound foolish."

SADOWA.

## TRIAL OF MRS. WHARTON.

THE daily papers contain very full reports of the trial at Annapolis, Md., of Mrs. Wharton, charged with the murder by poison of Colonel and Brevet Major-General W. S. Ketchum, U. S. Army, while he was a guest in her house. The correspondent of the New York Times thus sums up the case for the prosecution:

A close investigation of the facts alleged by the prosecution shows a remarkably strong case of circumstantial evidence against the accused. The testimony thus far presented is well enough understood to show that General Ketchum died in Mrs. Wharton's house by poison, and that there was a mercenary motive alleged to exist on her part—the fact that he held her note, past due, for \$2,800, with three months' accrued interest—to warrant the suspicion that she was the poisoner. It is not generally known, however, but will in all probability very soon be developed in the testimony, that she not only claimed that the note had been paid, but demanded the return to her of four thousand dollars of five-twenty bonds which she alleges she had given to General Ketchum either to be transferred into ten-forties or for safe keeping. She made this demand of Charles Ketchum, the deceased's eldest son, and it resulted in an interview between her and Paymaster-General Brice, whose wife is General Ketchum's sister. Charles Ketchum administered upon his father's estate; hence the demand on him by Mrs. Wharton. There is a younger son, James, who is not yet of age. When Charles took possession of his father's effects he very fortunately had a witness present in the person of General John H. Eaton. It seems that General Brice advised him to this precaution, and requested General Eaton to act in this capacity. The reason for this fortunate foresight is evident in the fact that it was not known whether the General left a will, and it was to guard against the possibility of charges, such as Mrs. Wharton's friends now make, that General Eaton acted the part of friendship toward the son of his old comrade. Mrs. Wharton's charges are that Charles Ketchum has the five-twenty bonds now in his possession, and that he has secreted them from her. She says it is as just and as reasonable for her to charge against the Ketchums the crime—if it were true, it would be a crime—of conspiring to defraud her out of the bonds, by charging her with the General's murder, as it is for them to assert that she poisoned him to get out of paying the \$2,800 note.

The interview between her and General Brice was the first intimation that the friends of the deceased had of her claim against his estate. They had carefully collected his effects, and found them to correspond exactly with the schedule prepared by him on June 12, previous to his death. Both General Brice and General Eaton, who knew him intimately, represent him to have been a man of wonderful precision in his business affairs. He was accustomed each night to make a memorandum of his expenditures during the preceding day, which was so minute as to include even the amount or number of pennies he had given to the "colored beggars at the street corners." At the end of each month it was his habit to add the amounts of these memorandums together, and thereby determine his expenses. In fact, he was a remarkable man in this respect, and subjected himself to a great amount of labor by keeping without intermission this very exact diary of his finances. Whenever he collected interest, or made any change whatever in his

assets, he made out a new schedule. He noted on his schedule the payment of notes due to him, or the interest thereon, and then made out another, showing the date of the future payments. The schedule of June 12 is brief and succinct, for his fortune was eminently all in cash capital, except the real estate that he had recently purchased in Washington. When it is brought to light, it will show that he held United States securities to the amount of \$59,000, together with the note of his son Charles, for \$2,800 10, and Mrs. Wharton's note for \$3,600, and that the interest due thereon, with dates of the time of payment, are carried out with scrupulous correctness. His friends say, and bring forward the foregoing facts regarding the nice manner of his business habits to prove it, that he would not have accepted the trust which Mrs. Wharton alleges she placed in him, without giving her a receipt particularizing the amount and number of the bonds. She has no such receipt. They add that, from their knowledge of his character, they think he would have declined accepting such a trust.

General Brice told Mrs. Wharton that he was under the impression that she was indebted to the estate and not the estate indebted to her. She positively asserted that she had given General Ketchum the bonds eighteen months before, or about three or four months after giving him her note. She added that she had taken up the note on the 16th or 17th of June, at Mrs. Chubb's house in Washington, and that she had destroyed it in General Ketchum's presence. She stated further that she had no witnesses of this alleged fact, but asserted it as a positive truth. Charles Ketchum believed her. General Brice did not, and found something in her manner, although she was intrepidly cool and imperturbable, to confirm a lurking suspicion that she was guilty of his friend's murder. He finally told her that if her projected visit to Europe depended on receiving those bonds, she might as well abandon all idea of going, for she never would receive them. She then bid them good morning, remarking that inasmuch as her visit was one of business, and her time limited, she could not remain to pay her respects to the ladies of the family.

A few days subsequent to this General Brice received a note from Dr. Williams containing the result of the analysis of General Ketchum's stomach, to which he replied giving his suspicions regarding Mrs. Wharton, and the details of the foregoing interview. The result of that reply, as you are already informed, was the discovery of the motive for the murder, as now alleged by the prosecution, and the consequent indictment of the unfortunate woman by the Grand Jury of Baltimore county.

The same correspondent in describing those present at the trial draws the following portraits, which many of our readers will recognize:

"Another celebrity in the court is Charles Ketchum, son of the deceased general. He is a young man of twenty-five or thereabouts, wears silky side whiskers, has a soft eye and clear complexion and dresses very quietly. He is a powerful aid to the prosecution, and is thoroughly acquainted with the details of the evidence on both sides. He makes no display of his knowledge, and is a quiet, inoffensive observer of the proceedings in which, next to Mrs. Wharton, he has a deeper interest than any of the crowd present.

The towering form and commanding presence of Paymaster-General Brice is also to be seen prominent among the crowd of witnesses who are anxiously waiting to be called. His square jaws, close-out whiskers, and swarthy face make a strong contrast with the clear, pale complexion and snow-white beard of his friend General Eaton, who is another expectant witness. General Brice's connection with the case has been very near. He was among the first to point out the possibility of foul play in the manner of General Ketchum's death. He it was who wrote to Doctor Williams, of Baltimore, hinting his suspicions, and found that they were confirmed in the opinion of that gentleman, who had already communicated similar hints to the law officers of Baltimore.

The appearance and surroundings of the prisoner are thus described:

The county jail of Anne Arundel county, in which Mrs. Wharton is confined, is a three and a half story brick building, out of which negro and other convicts make easy escapes by pushing holes through the soft walls. It is one of the oldest of the very many buildings in this quaint, old-fashioned town. Since and during the war it has been well filled, as a rule, but is now comparatively empty, as, except Mrs. Wharton, there are only seven prisoners within its walls. Mrs. Wharton's cell is on the second floor, northwest corner, and directly opposite the apartments occupied by the family of the sheriff. The apartment is about thirteen by seventeen feet in size, and is carpeted and furnished by Mrs. Wharton herself. From this room Mrs. Wharton is daily conveyed to a carriage in the private or sheriff's entrance of the jail, and thence driven to the court-house. She returns to it in the same way, and is privileged to climb to the second floor by a private stairway, so that she is never seen by or comes in contact with the other prisoners. Her meals are sent from "Black's restaurant" at her own expense, and she is waited upon by a colored servant-girl, whom she has hired since her arrival here from Baltimore.

On the mantle, directly over a very large and comfortable wood stove, she keeps her Bible, Book of Common Prayer, and "Thoughts on the Services," by Cox. There are no attempts to relieve the bare and dismal appearance of the newly whitewashed walls by ornament or engravings. About the room are cologne, hair restorative, and other toilet articles. The appearance of the room is cheerless, and is only relieved from actual bleakness by its neat and cleanly system of arrangement, which shows that the occupant is a woman of fastidious taste. Mrs. Wharton is allowed to receive such visitors as she chooses to admit, and has received a number of old friends, including many ladies. In conversation she seldom refers to her present misfortune, except to declare her ability to establish her innocence. She enters into



the discussion of ordinary topics with great avidity, and were it not for her surroundings, one would soon forget the terrible charge now pending against her. She is regular in her devotional exercises, has a fair appetite, and seems satisfied that her incarceration will not be of long duration. She exhibits a spirit of restlessness at times, the very natural result of long confinement, but, all things considered, is wonderfully contented and patiently resigned to her fate.

## EXECUTION OF ROSSEL.

THE Paris correspondent of the New York Times gives the following description of the execution of Rosset, Ferre, and Bourgeois:

A few days ago M. Thiers received the Chinese Embassy, sent to apologize for the murders of Tien-tsin, and began his reply as follows: "You tell me," said he to the chief ambassador, "of the numerous punishments inflicted on the guilty. The French nation is too humane to take pleasure in the shedding of blood. It demands only that security which is necessary to restrain the wicked, and it believes that to rigorous measures others of a very different character must be added. It is the duty of governments, while repressing the excesses of the populace, to calm its passions, to dispel its prejudices, and to bring it to the voice of reason and humanity." A few hours after this sharp lecture to the astonished Celestials, M. Thiers signed the death-warrant of Rosset and Ferre. The friends of the President have frequently circulated the report that he used all his influence to save Rosset, but very few will believe this tale, for no one can forget that the right of pardon legitimately belongs to the Sovereign or to the Executive, and that it was at his own demand that a commission was appointed to take the responsibility. When it is shown that M. Thiers has failed to have his own way in any one small point, or failed to carry any measure he desired, we can have a little more patience in listening to his friends when they try to relieve him from all blame in the matter. Such is the view taken in private conversation, but the journals do not dare to criticize. Another journal has been added to the list of suppressions, and there is a very general fear which is very plainly, almost ludicrously, seen from day to day. But in giving their romantic and touching accounts of the execution, they have done the Government more harm than if they criticised openly. Everywhere that I have visited to-day I have found women in tears, and even men are not ashamed to show their emotion at the death of Rosset. There is something horrible in the idea of keeping these men waiting for death for near six months' time, and then shooting them in cold blood, for if any of them were to be shot it should have been done promptly and without an hour's delay. Rosset was found in precisely the case of Armand Carrel, who joined the Republicans in Spain, leaving the French army for the purpose. Carrel was acquitted. The two men were similar in many respects, but Rosset had more military genius. Had they not killed him I have no doubt that he would have been one of the most distinguished officers of the French army. His two volumes, written when in prison, upon army organization, remain to show what kind of a man he was. But Rosset chose the wrong side, like many officers who joined the Confederates, and for this fault he was yesterday shot to death, in company with Ferre and a sergeant of the line named Bourgeois.

It was not until Monday, after his return from Rouen, that M. Thiers signed the death-warrants. Twenty-four hours must elapse before the execution, but the prisoners are not informed until the morning. About 3 o'clock a crazy man in a cell adjoining Rosset's set up a fearful cry, arousing the prisoners, and bringing all the guardians of the prison. When the Advocate Joly entered the cell he found Rosset sleeping, and touched him lightly upon the shoulder.

"Ah!" he said, recognizing M. Joly, and raising himself upon his elbow, "then it is for this morning?"

"Yes," replied M. Joly.

"At what hour?"

"They will come for you at six o'clock."

"For—?"

"For 7 o'clock."

"What! so short a time! And what o'clock is it now?"

"Half-past-four."

"Ah! you promised to notify me sooner. Well—"

Seeing the emotion of M. Joly, Rosset tried to comfort him. Soon after the pastor, Passa, entered.

There was an affecting scene between them, Rosset, always calm, reproaching them for their tears. He related the alarm of the morning.

"What did you do?" asked the pastor.

"I rose—"

"You thought it was for Ferre?"

"Yes, and for me; I dressed myself."

Rosset had no hope; his sisters were hopeful even the evening before. Wishing to be alone to say his devotions, Rosset asked the company to leave him, but the guardian refused. Rosset complained a little since he was so soon to die, but soon recognized that the man was only obeying orders. He prayed for some time at the side of his bed, then rose to arrange his papers, and to give to the pastor the last directions concerning his books, his manuscripts and letters to his parents, his sisters, and his betrothed. The pastor then administered the communion. Colonel Rosset, the father, is a Puritan. The mother is a Scotch woman—a Campbell—and the family has many relatives now living in Scotland. Throughout this trying morning, Rosset was calm and resigned to his fate, and all of his remarks are manly and touching. I cannot give all of the prison scenes.

It was a cold, dark, November morning, a heavy fog obscuring everything at 6, and the street lamps were still lighted. During this time Ferre had dressed himself with unusual care, putting pomade upon his hair, and spending a long time in brushing his clothes. A

priest came to see him. Ferre was smoking, and replied to the priest's offer to pray with him, "Wait a bit, can't you, there is no hurry," but after a time he took the cigar from his lips, and said: "No! a materialist I have lived, and a materialist I will die." He wrote a letter to his sister reiterating this phrase. Bourgeois rose jauntily from his bed, made his ablutions like a soldier, then listened to the consolation of the priest. After this he lighted a cigar, and went out jauntily, with light military tread, and with his *kepi* cocked upon one ear. He was cool, but there was no bravado about him, while Ferre seemed to be constantly searching for effect. Before 6 o'clock large detachments of troops were under arms, and occupying the camp of Sartory and its approaches. The three condemned were carried in ambulance wagons, but very slowly, it being still dark, and the horses' feet slipping often upon the frosty road. Gendarmes were stationed upon the route to turn back the crowd, and to stop all passage after the wagons.

A few moments after the wagons had passed, a tall, straight, soldierly old gentleman wearing the rosette of the Legion d'Honneur, asked leave to pass and was refused. It was the father of Rosset, who then knew all. Turning in his tracks he seized the arm of a friend and cried like one distracted: "They are going to assassinate my son—my brave boy! Ah! if all the officers had been like him we should not be where we are now." The poor old soldier rushed away even then to break into the Cabinet of M. Thiers, but to no end, of course, and for the rest of the evening he was wandering about the streets of Versailles crying: "They have murdered my son—my only son." Fearing that this touching spectacle might raise an emeute, a large number of troops were kept under arms, but the public emotion was expressed in tears.

The moon was still visible through the mist and the dawn slowly approaching when the condemned descended from the wagons in charge of the gendarmes. All marched boldly to the three posts before them—some twenty-five yards apart—and about thirty paces in front of which were the three firing parties. Rosset was shot by a detachment of the engineers, to which corps he belonged, and the other two by detachments of two regiments of the line, the firing party being commanded by sub-lieutenants, an adjutant giving the signal with his sword. As he took his place against the post, Rosset asked leave to command the fire, but this being refused him, he asked if he could take the hand of Colonel Merlin, the President of the court, to assure him there was no ill-feeling. He was told that Colonel Merlin was not present at the moment, and that to wait for him would be to prolong the misery of the others. Rosset said nothing more, but stood calmly before the platoon awaiting the signal to fire.

Meantime Bourgeois had marched gaily to his post, saluting the troops as he passed, and in a business-like way threw down his cigar, threw open his coat, and stood in an easy position awaiting the word. Ferre was a *poseur* to the last. A number of times he changed his position, looking at his legs and then at the few spectators, but no position seemed to satisfy him. He then cast a rapid glance towards Bourgeois, and immediately struck the soldier's attitude. Seeing that Sergeant Bourgeois had thrown down his *kepi*, Ferre took off his tall, stove-pipe hat, and held it in his hand, and only took the cigar from his mouth at the moment of the report.

The firing party were directed by motions of the adjutant's sword, and as he let it fall the three platoons fired together. Rosset fell dead, and almost without motion, with two balls through his heart, one through the chin, and both arms are said to have been broken. Bourgeois fell, but, breathing still, a sergeant gave him the *coup de grace*. Ferre was still standing. As the sergeant approached he was shocked at the idea of firing thus on a living man standing upright before him, and his hand faltered, but at that moment another gun was fired and Ferre fell to the ground. It was then only that the sergeant had the heart to fire a ball into his head, against which the muzzle of the gun was placed. It was a ghastly scene. As the sergeant turned two white dogs burst through the line, and bounding by the bodies of Rosset and Bourgeois, pounced upon Ferre and began to lick the blood from his face. It was with the greatest difficulty they could be driven away.

The drums were then beaten, and the defile of the troops began. As the noise died away, the Pastor Passa called Colonel Merlin's name in a loud tone; and as that officer responded he said: "It was Rosset's last wish that I should tell you that he felt you only did your duty. It was that he desired to tell you himself." "*Pauvre garçon*," said the good Colonel Merlin, raising his cap and putting himself at the head of his troops. By 8 o'clock the detachments had entered the town; but a very strong force was kept under arms during the day. In the evening there were rumors of an emeute in Paris, and the troops were called out there, but no disturbance took place, yet the emotion of the people was very great. M. Thiers was generally blamed. During the evening several men went the rounds of the cafes to say that the people ought to demand the names of this "Committee of Pardons," or "of Murder," in order to know who could be held responsible, and all recalled the fact that it was the first time any ruler had given up the right of pardon; yet in no quarter was there any outbreak.

For my own part, I think the Government did a very unwise and impolitic thing in killing Rosset, and I fear it will yet lead to trouble. In private life, even the most bitter enemies of the Empire say that there was nothing under it approaching this execution; and in the evening I saw a horrible drawing, which, of course, cannot be published here. It represents the well-known picture of the death of Ney, or of the Duc d'Enghien, the dead man lying upon his face beside a wall, and a squad of gendarmes marching away. In this parody upon it the dead man is Rosset. The head of M. Thiers is seen looking over the wall, and beside him Saint-Hilaire. "*C'est bien fait*," he says aside to the latter, while he cries to the squad, "Don't forget, Sergeant, I did all I could to prevent it. You'll tell the good people, you know."

A CORRESPONDENT writes us as follows from Rome:

"A pleasant reunion of Americans in Rome was enjoyed on the 16th of November at the residence of America's distinguished poet and artist S. Buchanan Read, Esq., at a dinner given to Major-General George L. Hartuff, U. S. Army. Among the guests were officers of the Army, Navy, and Marine Corps, and many artists not unknown to fame. A toast to the Army was responded to by General Hartuff, and the Navy by Lieutenant-Commander A. S. Barker. "West Point" was answered by R. H. Savage, formerly of the Engineers. "The Beautiful Ladies of Baltimore" by Maryland's famous artist Mr. Rinehart, and "Kentucky" by Lieutenant Clay Goodloe of the *Wachusett*. The hospitable host, Mr. Read, kept the party in the happiest spirits by his great wit and repartee. The artists present were Messrs. Freeman, Montaland, Hazelton, and McPherson; several attachés of the American Legation, and Chief Engineer O. H. Lackey, U. S. Navy. General Hartuff, accompanied by Mr. Read and several officers, left Rome the following day for Naples, to visit the United States steamer *Wachusett*.

THE following order announcing the death of Mr. J. P. Keller, late chief clerk of the Ordnance Office, War Department, was issued to the employees of that office by General A. B. Dyer, Chief of Ordnance:

WAR DEPARTMENT, ORDNANCE OFFICE,  
December 11, 1871.

It becomes the painful duty of the Chief of Ordnance to announce to the employees of the department the death of Mr. J. P. Keller, the chief clerk of this office.

All the transactions of a service running through nearly half a century bear honorable record of him as a man and a public servant.

Universally respected and esteemed for those endearing qualities that form the Christian gentleman, his course through life is well worthy of the closest imitation.

As a mark of respect for the memory of so good a man, this office will be closed at 11 o'clock to-morrow, the day of his funeral.

A. B. DYER, Chief of Ordnance.

A NEWSPAPER despatch announces that "in the spring of 1869, one Egbert F. Ten Eyck, who had been for several years employed as a clerk in the War and Treasury Departments, was indicted for uttering forged checks upon the Assistant United States Treasurer at New York. Recent investigations of another class of frauds show Ten Eyck to have been extensively engaged in falsifying public records while in the Departments, and of forging statements of Government officials as the basis for the allowance of bounty claims. It is understood the authorities are now instituting measures for the discovery of all these frauds, and for the punishment of Ten Eyck and his confederates, some of whom are known. A heavy amount of money is involved in this nefarious transaction.

"OWEN'S MODERN ARTILLERY," a new English work, has just been imported by the "U. S. Military Post Library Association," and can be had at their headquarters, 58 Broadway, New York city, at a reduced price.

WE have received from the publishers the following new publications:

JOURNAL OF THE ANTHROPOLOGICAL INSTITUTION OF NEW YORK. Vol. 1: Waterman & Co., New York.

SOUTHERN VOICES. Poems. By William H. Holcombe, M. D.: J. B. Lippincott & Co., Philadelphia, Pa.

THE COUNTRY OF THE DWARFS. By Paul B. Du Chafflu. Illustrated; 12mo, cloth, \$1.75: Harper & Brothers, New York.

ÆSTHETICS, OR THE SCIENCE OF BEAUTY. By John Bascom: Woolworth, Ainsworth & Co., New York and Chicago.

HANNAH. A novel, cloth. By Miss Muloch: Harper & Brothers, New York.

THE YOUNG DODGE CLUB AMONG THE BRIGANDS. By Prof. Jas. De Mille. Illustrated: Lee & Shepard, Boston; Lee, Shepard & Dillingham, New York.

A COMPREHENSIVE GRAMMAR OF THE GREEK LANGUAGE. By Alpheus Crosby: Woolworth, Ainsworth & Co., New York.

E. STRICKER, the German news agent and publisher, New York, has issued for gratuitous distribution catalogues containing a list of bound German books, selections of German publications from the departments of philosophy, aesthetics, and Protestant theology, German picture books, etc.

MACABONIC POETRY, collected, with an introduction. By John Appleton Morgan, A. M.: Hurd & Houghton, New York.

A TREATISE ON ENGLISH PUNCTUATION. Designed for letter-writers, authors, printers, and correctors of the press, and for the use of schools, etc. By John Wilson: Woolworth, Ainsworth & Co., New York and Chicago.

TEACHER'S GUIDE. Companion to Bartholomew's Drawing book. By W. N. Bartholomew: Woolworth, Ainsworth & Co., New York.

## LETTERS IN THE NEW YORK POST-OFFICE.

THE following is a list of letters remaining in the New York Post-office on the dates given. These letters are retained in the New York Office for one month from date, after which they are sent to the Dead-Letter Office, Washington:

## ARMY.

## DECEMBER 8.

Byrns, James N., Captain.  
Eldridge, Isaiah, Captain.  
Elwell, Robert, Captain.  
Fish, C., Captain.  
Hooper, Henry, Colonel.

Johnston, Charles, Captain.  
Power, R. A., Captain—4.  
Sloan, S. C., Captain.  
Ullman, Daniel, General.  
Williamson, Geo. W., General.

## DECEMBER 12.

Alexander, L., Captain.  
Graves, W. E., Captain.  
Harrell, John M., Colonel.

Larned, D., Colonel.  
Mank, W. S., General.  
Stewart, R., Captain.  
Redding, J. W. E., Major.



## MARRIED.

[Announcements of Marriages should be paid for at the rate of 50 cents each.]

**PARKER-JENKINS.**—In Washington city, Tuesday, December 5, 1871, by the Rev. Mr. Addison, Rector of Trinity church, Washington, Lieutenant WILLIAM H. PARKER, U. S. Navy, to Miss ELISS THORNTON, daughter of Rear-Admiral Thornton A. Jenkins, U. S. Navy.

**BRITTEN-BRESEINGHAM.**—At Toledo, O., December 3, 1871, by the Rev. Father Batt, Brevet Captain THOS. BRITTEN, U. S. Army, to Miss MAGGIE BRESEINGHAM, of Napoleon, Ohio. (No cards.)

## DIED.

**BUSH.**—In Somerville, Mass., December 8, of Diphtheria, JOSEPH HOWE, youngest son of Captain Joseph and Angeline P. Bush, Twenty-second Infantry, U. S. Army, aged 3 years, 1 month and 10 days.

Vermont papers please copy.

**ALMY.**—In Washington, D. C., on Sunday, the 10th instant, SARAH GARDNER, wife of Commodore John J. Almy, U. S. Navy, and daughter of the late Colonel C. K. Gardner.

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OFFICE ACTING COMMISSARY SUBSISTENCE,

WILLET'S POINT, N. Y. H., December 3, 1871.

**SEALED PROPOSALS, IN DUPLICATE, WILL**  
be received at this office until 11 A. M., January 3, 1872, for furnishing the FRESH BEEF required by the Subsistence Department U. S. Army, for officers and men at this station, during Five months commencing February 1, 1872. A deposit of \$100 will be required with each proposal as a guarantee of good faith. Information as to conditions, payments, etc., can be obtained by application to  
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A SECTION of Light Battery C, Third Artillery, under Lieutenants Mount and Caff, arrived at Columbia, S. C., on the 25th of November, from Charleston. Company E, Eighteenth Infantry, Captain Kline, and G, Second Infantry, Captain Drom, also arrived at Columbia on the 27th. The approaching trials of the Ku-Klux prisoners is supposed to be the cause of the concentration of additional troops at Columbia. The permanent garrison of the place consists of two companies of the Eighteenth Infantry, under Lieutenants Sealey and Todd.

THE following officers reported at headquarters Military Division of the Pacific, during the week ending December 5, 1871: Captain William B. Hughes, assistant quartermaster; Second Lieutenant J. R. Wasson, Fourth Cavalry; First Lieutenant B. Reilly, Jr., Fifth Cavalry.

## U. S. ARMY AND NAVY JOURNAL.

NEW YORK, SATURDAY, DECEMBER 16, 1871.

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SUBSCRIPTION, SIX DOLLARS A YEAR.

The Editor does not hold himself responsible for individual expressions of opinion in communications addressed to the JOURNAL.

The postage on the JOURNAL is twenty-five cents a year, payable quarterly in advance, at the office where received.

Subscribers who purpose binding their volumes at the end of the year should be careful to preserve their files of the paper, as we no longer stereotype it, and are not able, therefore, to supply all of the back numbers of this volume.

The subscription price of THE ARMY AND NAVY JOURNAL is SIX DOLLARS a year, or THREE DOLLARS for six months, invariably in advance. Remittances may be made in a Post Office money order, United States funds, or Quartersmasters', Paymasters', or other drafts, which should be made payable to the order of the Proprietors, W. C. & F. F. CHURCH. Where none of these can be procured, send the money, but always in a registered letter. The registration fee has been reduced to fifteen cents, and the present registration system has been found by the postal authorities to be virtually an absolute protection against losses by mail. All postmasters are obliged to register letters whenever requested to do so.

## WHAT A MILITARY JOURNAL SHOULD BE.

A CORRESPONDENT in Texas has referred to us a circular issued by Army officers at Yorkville, S. C., in which they announce that they "have formed themselves into an association for the purpose of establishing a monthly periodical, designed to contain a regular monthly letter from each regiment, staff corps, and department and division headquarters, devoted to such items of information concerning the regiment, corps, or headquarters, as will be of interest to the Army at large; each monthly number to afford, in a convenient form, the history of the U. S. Army for that month. In addition to the regular letters, other correspondence devoted to military news exclusively, will be welcomed." They state that "no discussions—only narratives of facts—will be 'permitted in its columns.'" The objects which the officers issuing this circular propose to themselves, are similar in many respects to those which led to the establishment of the ARMY AND NAVY JOURNAL, and have governed its course, from its first number up to this time. We, however, dissent entirely from the proposition to exclude "discussions." It has been our aim, on the contrary, to invite and suggest discussion of all important matters concerning the interest of the service, the development of the art of war, proposed improvements in arms, ammunition, accoutrements, etc., and whatever measures might be introduced into Congress touching the interests of the service. The result has been that we have not only published a great amount of valuable information, but have drawn out a vast amount of correspondence, the most of which, we are sure, has rightfully secured the attention of the Army, and frequently it has contributed essentially to influence and modify legislation to the benefit of the service. Our purpose is to watch over the interests of the Army, as well as to gazette its official facts and report its movements. We stand as its representative in the press, and should fail of our mission if we did not use every honorable and available means of defending it before the public when assailed, and sustaining its just claims against abridgment when so threatened by legislative action. By never willingly undertaking to suppress facts, or to manufacture sophistical arguments to attain however desirable an end, and by always striving simply to fairly and clearly state a case this journal has won an influence among the journalistic press outside its own sphere, with Congress and the Government officials, and with fair-minded people generally, of which the editor may declare himself proud, and which, he thinks, has directly redounded to the benefit of the services whose spokesman he is.

Perhaps the proposers of the bulletin above outlined will allow us to claim a wider experience of journalism than they enjoy, and therefore to instruct them that no paper can hope for life or influence, and especially no Army paper, which does not first gain respect for itself; not merely as a recorder of facts, but also as an organ of opinion. Now there is a distinct Army and Navy opinion, growing out of the difference between the organization of those services, and that of all the other services under the Government. In our view, and we have always maintained it, the high personal honor, the sense of

strict accountability, the stout loyalty, the absence of political partisanship, the faithful obedience of the Army and Navy, are qualities so rare in the service of a republic, and yet so essential to its existence, that the people of the United States, in spite of the vaticinations of demagogues and professed social reformers, owe much more than most of them understand, of the strength of their institutions and the success with which these have withstood many a violent strain, to the two loyal, compact, honorable, and enduring services which have worn their uniform, wielded their arms, and commanded their ships. It is because the JOURNAL profoundly believes this that it always stands at guard and at arms to defend its clientage against unfair attack and any infringement upon their rights. This we say to show that "discussion" is an essential part of an Army paper.

As to the other points of the circular: The ARMY AND NAVY JOURNAL will make itself in every respect a faithful bulletin of everything of interest, proper for publication, occurring in the Army or Navy. To that end it has given special prominence to personal and other matters of news concerning the services. Undoubtedly, if the officers of the Army would make it their duty to forward to us, or see that there were forwarded to us, all facts of interest taking place within their knowledge, our weekly budget of Army news would be more complete. We are sure they would do so if they realized that it was for their common interest to have the JOURNAL as thorough an exponent of Army life as it is possible to make it. We are much pleased to hear that the circular we quote above has been extensively distributed through the Army, because it may arouse the officers to a consideration of the propriety of so arranging that the JOURNAL shall have from each post and military station a weekly letter detailing the events of the week there transpired. All military news is not only cordially welcomed, but also eagerly sought by the editor of the JOURNAL. We wish we could obtain, and now ask (as we shall in another way more definitely) for every scrap of military information—official, personal, company, regimental—that can be gathered in the Army. In order to this we ask that in every post, garrison, and fortress in the country, some one be designated, or designate himself, to keep the JOURNAL informed of the military events there occurring touching persons and organizations, or contributing in any way to the fund of military knowledge, or possessing interest for the rest of the great Army family, of which each officer is a member. In addition we ask our military readers to freely point out any errors of omission or commission which the JOURNAL may commit, and here express our preference for criticism over compliment.

It is because it is in the nature of a criticism upon us that we so gladly hail the appearance of the circular of the Yorkville officers. It enables us to see what they—and probably they represent a whole class of officers—wish to find in the ARMY AND NAVY JOURNAL; and while we cannot agree with them as to the propriety or possibility of confining an Army paper to so narrow a sphere as they propose—ignoring the facts in the science of war daily contributed by investigators and experimenters both at home and abroad, and the discussions growing out of these facts—yet we heartily join with them in commending to the Army the advantage to it of just such a current history of its doings as these officers call for, and that history, with their help, shall be found in the columns of the ARMY AND NAVY JOURNAL as it can be found nowhere else.

And this brings us to consider the feasibility of their project. Let us say frankly to our South Carolina friends that their monthly paper can never be successfully established, and in saying this we speak with the confidence born of much experience as to what is and what is not possible in journalism. With our diminished Army and Navy, there is room in the United States for but one military journal. This is the first military paper in this country which ever approached success, and the success it has won has proved its necessity, and that more nearly than any other it has satisfied the demand which gave it birth.

THE Chinese have sent Mr. KRUPP an order for eight steel guns of different sizes, and a German has been already appointed to the office of drill instructor, to teach the use of these guns to a class of Chi-



nese ladé connected with the Government arsenal at Shanghai. A Prussian instructor in military tactics has also been imported by the Chinese authorities to drill a body of men at the arsenal. The words of command are, it is said, to be in German. The North Chinese *Daily News* which gives us this information says: "In the neighborhood of Shanghai, the Chinese will now have three several departments of native troops drilling in English, French, and German, and doubtless many still serving under the old regime. Should the men ever be called upon to work together, only MOLTKE, able to issue commands as if they had the gift of tongues, could brigade them. When called on for duty, either these soldiers will aptly represent a military Babel, with the diversity of tongues once more a source of division and weakness, or the foreign veneer will drop off and they will revert to native tactics under a native leader. The system, however, has its satisfactory side—for foreigners."

WE add an extra sheet of four pages to this number of the JOURNAL, in order to make room for a translation by Brevet Captain MICHAELIS, of the Ordnance Corps, of a most valuable *mémoire* on field artillery by Captain NICAISE, one of the prominent artillery officers of Belgium, a country which, though unvisited by war for many years, has always been noted for the excellence of its armament; a distinction due entirely to its possession of numerous scientific officers, among whom we need only recall in proof of this statement the names of BORMANN, NAVEZ, LEURS, TIMMERHAUS, TACKELS, SPINGARD, DUMONT, and LE BOULENGE. In this translation, and the diagrams accompanying it, the French measures are converted into English, and it is accompanied with notes by the translator which will add greatly to its value for American readers.

Captain NICAISE was selected by his government to attend the great armor experiments at Shoeburyness in 1868, at which the endurance of our 15-in. gun was really first verified, after the ARMY AND NAVY JOURNAL had by persistent argument persuaded the British artillerists to treat our "chunk of iron with a hole in it" to "a decent dose of powder." Captain NICAISE's report of these experiments, "Batteries Cuirassées" has been translated into German, and is accepted as a standard authority. His present work, though entitled "Belgian," is in truth a general treatise on the merits and requirements of all modern "Field Artillery." Further, as the Belgian is a counterpart of the Prussian system, approved by the results of two great wars, this pamphlet gives us some idea of the most successful light ordnance of the present day.

The conclusions of Captain NICAISE, fully confirmed by German experience amid the mountains and forests of Bohemia, in the fastnesses of the Vosges and Ardennes, on the plains of the Marne and Seine, would seem to justify a trial here of steel breech-loaders, in contrast with our own favorite light 12-pounder and the ordnance 3-in. rifle. And for this purpose Mr. KRUPP is prepared, we understand, to place a German 3 or 3.45 in. gun, fully equipped, at the disposal of our Government on very liberal terms. Such a comparative trial, easily brought about and inexpensive, could not fail to give valuable results, whatever might be its issue.

The general conclusions to which Captain NICAISE has been led are that the rifled guns of Belgium up to 1,094 and 3,281 yards, fire more accurately than the old smooth bores up to 437 and 1,312 yards; that the efficacy of the ricochet firing of round shot has been greatly exaggerated; that at all distances wherein artillery can act usefully the case practice of the rifled guns is superior to the canister of the superseded smooth bores, and that the tactical importance of canister has steadily diminished as the range and rapidity of infantry fire have been increased by successive improvements in its arm from the old flint-lock to the breech-loader. Artillery, he claims, ought to be able to act efficiently on the battle field beyond the effective range of the present small arm, that is beyond 1,094 yards, a distance at which the smooth bore gives only mediocre results, whereas rifled artillery has the same effect fired at 1,094, at 1,312, and even at 1,750 yards. As to the comparative value of the breech-loader and muzzle-loader he claims that breech-loading, besides giving greater rapidity of fire, suppresses windage and pre-

vents balloting, thus securing regularity and precision, and giving greater velocities with relatively smaller charges; and that the bore in breech-loaders is preserved from injury by the freedom of fused projectiles from wedging and their regularity of movement, while the soft metal coating prevents damage to the lands, and the bursting of a projectile does not mar or injure the gun.

Captain NICAISE's treatise is accompanied by a summary statement of the present condition of the artillery of the various European nations. This of itself should secure for the translation we publish the careful attention of our officers of ordnance and artillery. They cannot too soon learn that the experience of our war, valuable as it was, will not serve them for a lifetime and that there is much to be gained by a constant study of the latest European examples and conclusions.

CASTILIAN blood is certainly inflammable. President GRANT in his message referring to Cuban matters said: "Our naval commanders in Cuban waters have been instructed, in case it should become necessary, to spare no effort to protect the lives and property of *bona fide* American citizens and to maintain the dignity of the flag. It is hoped that all pending questions with Spain, growing out of the affairs in Cuba, may be adjusted in the spirit of peace and conciliation which has hitherto guided the two powers in their treatment of such questions." Hear the echo from this mild thunder which comes across the Atlantic:

London, December 10.—Tremendous excitement prevailed in Madrid upon the receipt of President GRANT's Message relating to the Cuban difficulty. The Government has resolved to maintain a firm attitude, and reinforcements of 4,000 men, two additional generals, and four iron clads will be immediately dispatched to Cuba.

In view of the patient manner in which we have heretofore submitted to Spanish procrastination, it is perhaps not surprising that tremendous excitement should be created in Madrid by the simple announcement that we have determined "to protect the lives and property of *bona fide* American citizens and to maintain the dignity of the flag."

MR. WILLIAM HOWARD RUSSELL is publishing, in the London *Army and Navy Gazette*, which he edits, "Passages from my Private Diary," containing incidents of his experiences as a correspondent of the London *Times*, during the late Franco-German war. Like all that so practised a letter-writer as Mr. RUSSELL offers us, these transcripts from his Diary are quite readable, but so far—several installments have already appeared—they present nothing very new or valuable in a military sense. Mr. RUSSELL, however, is successful in showing us that he moved not like an ordinary correspondent, but as a personage of mark, whom emperors, kings, princes and generals treated with a consideration which was not shown to him by Mr. STANTON when he was in this country. For instance, "His Royal Highness (it is the Crown Prince of Prussia) was good enough to express his satisfaction that I had come to join the army," etc. And subsequently: "I had the honor of being presented by Lord AUGUSTUS LOFTUS, and of having a most gracious reception. The King remarked that 'public opinion was very powerful in these days, and that he was glad to see me there as the Minister of that Power.'" A few days later: "Lord RONALD and I are ordered to the palace, where we see the Queen. Her Majesty was all that was gracious, but full of grief and solicitude about the war. Met General VON ROON on the staircase. He was serious and courteous."

A FRENCH journal, the *Messenger de Paris*, says of M. THIERS: "The celebrated President need only look around him, and compare what he sees with what he has seen, to realize the depth to which we have descended by means of successive revolutions. Had not even the opposition under the Restoration, when it was led by CHATEAUBRIAND, ROYER-COLLARD, FOY, and BENJAMIN CONSTANT, a splendor and a dignity which it has never since possessed? These were worthy opponents of the Government. Under LOUIS PHILIPPE the opposition of the left, besides M. THIERS, who only too frequently favored it, was represented by ODILON BARROT, LEDEU-ROLLIN, and MANGUIN, and the right contained men like BEREYER. Who were the leaders of the

opposition in 1848? BLANQUI, BARBES, FELIX PYAT—what a fall is here! A generation of adventurers takes the place of a generation of statesmen. What did 1830 bring us? A fall from 1815. What 1848? A fall from 1830. What 1870? A fall from 1848. We think with horror of the monstrous dwarfs who are to create new revolutions, if we do not put an end to these senseless changes, which are destroying our national character and making us a nation where nobody can command and nobody obey, and in which incapacity reigns in the ruling, and lawlessness in the lower classes."

WE recently visited Battery Hudson, Staten Island, to witness the firing for the purpose of testing Major KING's depressing gun-carriage, which has for its object the protection of the gunners while serving their guns. The chasser inclines downwards to the rear so that when the gun has recoiled fifteen feet, it will be five feet below the level at which it is fired. A counterpoise weight about two-thirds of the weight of the gun and top carriage, checks the recoil and runs the gun up the inclined chasses rails to the firing position. The recoil is further controlled by increasing the friction by a judicious sanding of the rails. The gun has been fired one hundred rounds with 100 lbs. of mammoth powder and solid shot of 450 lbs., at various elevations from 30 deg. to 3 deg. of depression. The time of loading and firing is 3 1-2 minutes under favorable circumstances. When high angles of elevation are used and the gun does not recoil sufficiently far to load, greater time is required. The pressure on the surface of the bore is determined from time to time by the ordinary internal pressure piston, and a new and smaller one in which the measure of the force is determined by the amount of compression in length that a small cylinder of copper undergoes by the action of the gas at the bottom of the bore. By these gauges the pressure varies from 23,000 lbs. per square inch to 31,000 lbs.

The steep slope of the hill in front of the muzzle of the gun has prevented the determination of the velocities of the shot, but it is of little moment as this has heretofore determined. It is proposed to fire the gun still further to ascertain what will be the effect on the carriage, of not sanding the rails, as it is known that the increased friction caused by sanding brings greatly increased strain on some parts of the carriage, on the pintle and platform. We observed that the pintle block, a large piece of solid granite, was broken in the middle by the firing of the 100 rounds.

Whether Major KING's carriage will be adopted or not, we have seen enough of it to warrant us in the assertion that it is the most successful carriage of the kind that has yet been tried, and that the gunners who serve it are well protected from the direct fire of the enemy, a consideration of acknowledged importance in the defence of our harbors and seaports. But whatever the advantages of Major KING's carriage has over those at present in use, it is destined, we opine, to give way ultimately to a carriage adapted to the use of that universal motor, steam.

THE following bills relating to military and naval matters have been introduced into Congress thus far:

By Mr. Williams, of New York—To reorganize the staff of the Army.

By Mr. Slocum, of New York—Authorizing the sale of arsenals, etc.

By Mr. Whithorne of Tennessee—To extend the provisions of the law granting pensions to the soldiers and sailors of the war of 1812, to all who served in that war for any period of time, their widows and children.

By Mr. Kerr, of Indiana—To extend the provisions of the act granting pensions for the war of 1812, to those who served in the Indian campaigns of 1811 and 1813 under General Harrison.

By Mr. Storms, of Pennsylvania—To prevent the enlistment in the Army of persons under the age of twenty-one years.

By Mr. Archer, of Maryland—To regulate pensions in the Navy and Marine Corps.

By Mr. Archer, of Maine, from the Committee on Naval Affairs—To place on the naval pension roll the names of the widows and minor children of Newton H. Adams and John Rudenstein, late surgeons in the Navy. Passed.

By Mr. Leonard Myers, of Pennsylvania—To the better detection and prevention of fraud in the Naval service.



## THE NATIONAL GUARD.

**THE SEASON OF DRILL.**—Company and drills by division at present occupy the time of the regiments of the First and Second division, and with few exceptions these drills are but sily attended. The Forty-seventh Infantry commence wing drills next Monday, having passed through one series of division drills. The Thirteenth is about as progressive, and everything generally looks lively in the Second division. The regiments of the First division, with one or two exceptions, continue drills by company, but are about introducing two-company or division drills. The Seventh is perhaps the most systematic in its drills, devoting the first portion of the season to company drills, commencing division drills in January, under the supervision of a field officer, and its wing battalion drills about March. It will thus be seen that this latter regiment divides its drill series into three parts of at least two months' duration. Therefore at the end of the season the wing drills of the Seventh become the military feature of the season, and attract excessively large assemblages; in fact, last season it became necessary to issue tickets, and even then a large portion of those who came a little late were debarred from witnessing the movements of the regiment. We have time and time again recommended this plan of the Seventh for adoption by other regiments of the National Guard, and in a few instances our suggestion has been followed. Its harmonious working is self-evident to any observer, and the good result at the end of the drill season cannot be overestimated, as any person interested can see for himself by attending the spring drills of the Seventh. We have observed with regret that several regiments in this vicinity, whose classification is not first, have made it a common rule to introduce battalion movements before the companies have scarcely an insight in the most simple rudiments of the school of the company, or even that of the soldier; the result is, of course, loss of time, and even demoralization. The recruit must first be perfected in the school of the soldier; then follows the school of the company and battalion, allowing perfection in each to be the criterion of advancement. By this method regiments are made perfect, and the drills gradually become interesting, and the regiment obtains a prominence most gratifying to its members.

**THE SPENCER COURT OF INQUIRY.**—This court holds its sessions, and the prosecution still continues to present evidence. The time is fast approaching for the introduction of the defence, and everything looks as if the brigade commander will refuse to order a court for the trial of the accused on the charges preferred. The columns of the JOURNAL for the past two weeks have been too crowded to admit of a continued publication of the evidence produced during that period. We therefore herewith append an abstract thereof from where we left off, and shall if possible publish these abstracts until the evidence is all taken, so as to give the National Guard a chance to judge for themselves in regard to this important and unprecedented case. We hope, however, as stated last week, that the court will see the necessity of curtailing the testimony, and thereby save further expense to the State:

J. C. Rushton, witness for the prosecution, sworn: John Clement Rushton, business, druggist, was a member of the National Guard on July 12; was hospital steward of Ninth regiment on that day, and was on duty on Eighth avenue on that day; did not see Captain Spencer on that day immediately before the firing, nor during the firing, but saw him, should say, within half an hour after the firing in Parker's bakery (I was very much excited with the rest); saw Captain Spencer in the second story, back room; had conversation with him. I entered the room in search of what wounded there might be found, and I saw Captain Spencer sitting on the bed; I approached him and made the remark, "What's the matter with you?" His answer was that he was badly hurt. I said, "Where?" He said, "I don't know." I then said, "Let me see." His shirt was undone at the neck; as I said, "Let me see," he motioned to his back. I pulled down the shirt and ran my hand down his back. I asked him what he was hurt with. He said, "I don't know," and I left him; did not see any blood; did observe great agony when I ran my hand down his back. The agony seemed to be from the pressure of my hand against his back. The appearance of Captain Spencer was that of a man in great agony. He appeared in greater pain when I ran my hand down his back than when I entered the room. As a druggist, I have had experience in the examination of wounds. I formed the impression from the examination I had made that Captain Spencer was wounded, and had been struck with something. There was not any perceptible indication; I formed the impression from the extra pain evinced by the pressure of my hand upon his back in making the examination; I passed my hand down next the skin; made an ocular examination as far down as the shoulder blade. There was no perceptible indication to sight, but there was to the sense of touch; could not swear that there was no swelling; from all the indications I believe he had been struck with something, and am now satisfied of it; by something, I mean a missile of some sort. I formed the opinion that he was wounded from his general appearance and actions at that time. He appeared and acted like a man that had been struck with something; did not see any missiles used at the time of the firing—that is, from my own observation.

**SELF-CONSTITUTED CHAMPIONS.**—Every now and then we read of some military organization of the country, independent or National Guard, defying the world in their military proficiency in drills, etc. With many of these organizations it has been the invariable custom to issue "loud" challenges, which are not accepted by the more sensible portion of the militia, whereupon they declare themselves the unqualified champions of the State, or United States, as the case may be, and then rest on an unwon laurel. The majority of these self-constituted champions number, as a company, considerably less than the maximum standard, and instead of conforming to the prescribed Tactics, adopt a fancy combination of little or no utility, and attractive only to those who know nothing comparatively of military science.

These remarks have been suggested, without direct reference, however, by reading the subjoined challenge published in the Rutland (Vermont) daily Herald, and issued by the commandant of the Norwich University Cadets. This challenge, however, is peculiar in one sense from those usually put forward, in that the cadets rebel against the decision of the Vermont militia prohibiting them from participating in a company competitive drill for regimental championship in a command of which, as far as we can see, they form no part. If, however, the cadets form a portion of any of the militia regiments of the State, they cannot be deprived of the right to enter in direct competition with the other companies. The challenge reads as follows:

NORWICH UNIVERSITY, NORTHFIELD VT., Dec. 5, 1871.  
The various military organizations in the State of Vermont having expressed an unwillingness to admit the cadets of Norwich University to the competitive drills for regimental championships, on the ground that the proficiency of the cadets in drill and the science of arms is such that it would be unfair for them to be permitted to compete with companies which have less time for acquiring such knowledge, and as such reasons are an indirect admission of the superior merits of the cadets in military science and tactics, I do, therefore, declare Company F, Norwich University Corps of Cadets, the champions of the infantry arm of the service; and artillery section second, Norwich University Corps of Cadets, champions of the artillery arm of the service, respectively, for the State of Vermont.

The above-named company and section will hold themselves in readiness to drill with any company or section of the State of Vermont, on the camp ground of the Second regiment Vermont Volunteer militia, at their next annual muster, or upon their own parade ground at the University, at any time between the 21st of June and the 30th of September. Challenges must be sent at least two months before the drill.  
CHARLES A. CURTIS,  
Captain U. S. Army, Commandant of Cadets.

**TWELFTH INFANTRY.**—The main feature in this command during the past week was the reception of Company K, Captain John E. Dowley, which took place at Irving Hall on Wednesday evening. Unusual efforts had been made by the members to give *ecceit* to the occasion, and few company balls given this season have brought forth so large an official representation, or been characterized by such hospitable attentions, general elegance, and perfection of arrangement. The regiment was represented by Colonel Ward, Lieutenant-Colonel Gildersleeve, Adjutant Murphy, and numerous line officers. There was also a large delegation of the officers of the Forty-seventh, headed by Colonel Austin; likewise Lieutenant-Colonel Dunn, of the Eighth Infantry and "Spencer" Court of Inquiry; Colonel Allen, of the Fifty-fifth; Brevet Major Mahnken, U. S. Army; Lieutenant Otto, of the First; Brevet Major Bush, of the Thirteenth, and many others. The ball-room, despite the unfavorable weather, was more than comfortably filled; and every matter, under the direction of Captain Dowley, First Lieutenant Packner, and a courteous committee, was perfect to a degree remarkable. During the evening the Forty-seventh officers, and the guests generally, were elegantly entertained, and nothing in the least was neglected to make all comfortable and happy.

**THIRTEENTH INFANTRY.**—Lieut.-Colonel Briggs, who is now virtually in command of this regiment, with the assistance of Major Daniell, and has been working hard at the division drills of the regiment just completed. The lieutenant-colonel is one of the workers of the regiment, and justly entitled to promotion; still we do not pretend to know that he aspires to the command of the "Old Thirteenth," in which he has spent the main portion of his life; but we do know that few officers in the National Guard are more capable, or love the service better. Unless the interests of the regiment can be better served—and we feel assured that Colonel Briggs in that case would give way—Lieutenant-Colonel Phillip Briggs should by commission be in command of the Thirteenth Infantry.

One of the pleasant social features of the Thirteenth for the past few seasons has been the introduction of what are termed social concerts, which have taken place at the State Arsenal, Brooklyn, and have been enjoyable from their entire absence of obtrusive formality and extreme dress. We see it is proposed to give a series of these concerts similar in character to those given last season. The series will consist of three concerts, given on January 4, February 7, and March 5, 1872. The price of tickets has been fixed at \$3 for the series, admitting a gentleman and ladies. The success attendant upon the moderate efforts put forth last season, together with the growing popularity of the entertainments, prove that, with proper energy, the present series can be made a greater success, and a material benefit to the regiment. Of course, much depends upon the individual efforts of the members of the entire command, and those who at-

tended the last series, and are familiar with the agreeable character of the entertainments, will be strong in their favor; in fact, no entertainments are given at which so much pleasure is furnished at so small a cost.

**SIXTY-NINTH INFANTRY.**—On Sunday the remains Major Michael Doran of this command were interred Calvary Cemetery with all the honor due an officer of rank. General Orders from headquarters of the First brigade to which the regiment was attached, express unfeigned regret at the loss of so faithful a soldier to the State and country. The funeral took place from his late residence, No. Forsyth street, and the following officers were detailed a pall-bearers: Lieutenant-Colonel Madden, First Cavalry; Lieutenant-Colonel Gildersleeve, Twelfth Infantry; Lieutenant-Colonel Stetson, Seventy-ninth Infantry; Ma McGrath, Twenty-second Infantry; Captains Brennan and Kerr, Sixty-ninth Infantry. Colonel Cavanagh, commanding the Sixty-ninth Infantry, detailed four companies of the regiment as escort, under Major Cruger, Twelfth Infantry. The officers of the brigade generally attended the funeral in full uniform, with the usual badge of mourning on the left arm, and the whole pageant was of the most imposing nature, the additional companies of the regiment passing a mourners.

**HOWITZER BATTERY, ELEVENTH BRIGADE.**—The following officers having been duly elected and commissioned, with rank from October 11, 1871, in this command: Julius F. Simons, to be first lieutenant, vice John H. Cannon, resigned; Munson H. Beebe, to be second lieutenant, vice J. F. Simons, promoted. The following appointment, with rank from November 20, 1871, is also announced: John A. F. Ellison, to be quartermaster-sergeant, vice W. A. Stagg, discharged. Sergeant W. A. Stagg having served the time required by law is honorably discharged from further service in the military forces in the State. The commandant, Captain Beebe, in orders thanks Sergeant Stagg for his faithful service, particularly as quartermaster-sergeant, in which position he has been untiring in the interest of the battery.

**TWENTY EIGHTH INFANTRY.**—On the evening of December 6 Major F. W. Obernier was unanimously elected lieutenant-colonel of this command, vice Shepard, resigned, and Captain A. Wills, of Company H, major, vice Obernier, promoted.

The regiment is now in good condition, and the filling of the field position so long vacant will tend to increase the interest of the members, and add to the strength of the regiment. The Twenty-eighth is filling up rapidly, and in general appearance and numbers is now almost beyond the recognition of its former acquaintances. Colonel Burger is a "heavy" worker in his way, and we must acknowledge that the Twenty-eighth was never in better condition than at present under his conduct. The new adjutant, Lieutenant Pape, is an important adjunct long needed by the regiment, and his happy knowledge of headquarter details, etc., is no one of the least causes of the regiment's prosperity.

**THE TWENTY-THIRD'S ANNUAL.**—The Brooklyn Academy of Music on Monday evening was the scene of the tenth annual reception of this favorite command of the Second division. These gatherings from year to year have increased so in favor, until they have become one of the fashionable features of the Brooklyn festive season. Technically these affairs are termed promenade concerts, and for that reason are misunderstood by many who attend, as is observable every season. The promenading never or rarely commences until the hour of dancing arrives, so that during two hours the promenaders remain quietly seated, looking, while listening to the music, upon the bright yet deserted scene before them. Such was the fact in this instance. There were present some 3,000 persons in full dress, semi-full dress, and walking costumes, all waiting for some one to take the initiative in the promenade. At a little past 9 o'clock Colonel Ward, the regimental commander, led off the promenade, escorting Captain Kramer, followed by some dozen officers of the Russian fleet, now in our harbor. Yet this, while it attracted much curiosity, failed to attract followers; and, after several tours, they finally came to a stand-still in line. Then some general officers and their staffs started a promenade, to a dirge-like selection; but the bell-tolling introduced was even too much for these officers, who, finding no followers, like the former party, soon ceased their "measured step." Finally the excellent programme of selections was completed, and preparation began for dancing. It was then that the floor filled with its gorgeously arrayed company, who, despite the delay of removing a music platform, and the consequent confusion, were soon in the active motions of the dance, and the scene was one of the gayest, until the final galop, which occurred about 2 A. M.

The Academy never presented a brighter appearance, the carpeting of the dancing floor, as first introduced last season by the charity ball, giving everything a home and drawing-room appearance. The introduction of life-size paintings, representing peace and war, and other handsome decorative novelties around and in the vicinity of the stage and boxes, added not a little to the interior of the building. The music and the performers, eighty in number, under the direction of Messrs. Papst and Contorno, was remarkable for its general excellent character and the able style in which it was conducted. One of the features of the concert was the introduction of an allegorical tableau representing "Washington crossing the Delaware," with suitable musical accompaniment. The guests were handsomely and properly received.



by a reception committee, headed by Colonel Ward, in a style remarkable for its perfect correctness and gallantry. In fact, as a whole, the reception was one of the finest ever given by this command, and never excelled in perfection of arrangement and general character. We, however, trust next season the "promenade concert" feature will be dropped, and that people will fully comprehend the annual receptions of the Twenty-third regiment.

**VARIOUS ITEMS.**—Company G, Twelfth Infantry, Captain McGowan, holds its annual reception at the regimental armory on Tuesday evening next. On the evening of January 2 Company H, Ninth Infantry, Captain Dow S. Kittle, give a reception to its friends at Apollo Hall. The sad intelligence reaches us of the recent deaths, within a few days' interval of each other, of the brothers of Colonel Clark and Lieutenant-Colonel Haws of the Seventh Infantry. Captain John Kissel and Lieutenant Adam Schneider of the Thirty-second have resigned. The Thirty-second will give its next annual ball on March 25, 1872. Lieutenant Jacob Ernst was elected captain of Battery B, Second division, vice Wackerman, *cloned*. Ex-Lieutenant Theriot, of Company D, Ninth Infantry, has been "resolved" in elegant style by his old comrades; and the company propose now to offer a similar courtesy to Company G (Jackson Guard), Ninth Massachusetts, for favors received last summer while the regiment was in Boston. The Veteran Association of the Ninth has now a hundred members, and its recent meetings have been most satisfactory. Lieutenant-Colonel Braine and Major Hitchcock are occupying their spare moments in supervising company drills. The New York Times seems particularly exercised regarding the rumored change in the First division of the State; but we can assure it and all others that not the remotest idea is entertained at General Headquarters of any such change. The proposed incorporation of the regiments of the First, Second or Third brigades are the suggestions only of a too fertile brain, and carry with them little or no effect. Why, any one can make such statements and propositions if they feel so disposed, but the matter of carrying them into effect is altogether another consideration. The brigades of the First division cannot be improved, as far as the infantry is concerned, and enough has already been done to the division in the way of changes, and any further effort in this direction would be injurious. The music for the regiments parading at the Grand Duke reception cost some \$7,000; but the amount appropriated by the Citizens Committee for this purpose amounts to just half this sum, which, perhaps, will be divided at a *pro rata* rate among the different regiments, on the principle that half a loaf is better than none. The music bill rendered by the Ninth amounted to \$900, exclusive of the serenade offered the Grand Duke. The annual hop of Company E, First Infantry, Captain Langbein, on Monday evening, at the regimental armory, was a happy success, as also was that of Troop C, Third Cavalry, on Wednesday evening, at the National Assembly Rooms.

#### CHANGES IN THE NATIONAL GUARD.

GENERAL HEADQUARTERS STATE OF NEW YORK,  
ADJUTANT-GENERAL'S OFFICE, ALBANY, Dec. 1, 1871.

The following-named officers have been commissioned in the National Guard State of New York during the month of November, 1871:

Seventh Brigade—Captain Constant White, ordnance officer, with rank from July 4, original; Lieutenant Aaron Ward Morris, aide-de-camp, with rank from October 2, vice Isaac P. Chambers, absent without leave.

Ninth Brigade—Major Frederick T. Martin, inspector, with rank from November 1, vice G. H. Treadwell, resigned; Major John Gould, judge-advocate, with rank from November 1, vice F. T. Martin, promoted; Captain Chas. E. Van Zandt, ordnance officer, with rank from November 3, vice D. A. Teller, resigned; Captain Henry C. Littlefield, quartermaster, with rank from November 20, vice Charles E. Van Zandt, promoted.

Thirteenth Brigade—Lieutenant-Colonel Charles H. Van Allen, assistant adjutant-general, with rank from November 15, vice D. M. Kittle, resigned.

Thirty-first Brigade—Major S. Douglas Cornell, judge-advocate, with rank from November 1, vice W. Hurdley, resigned; Captain Geo. A. Williams, quartermaster, with rank from November 1, vice S. D. Cornell, promoted; Lieutenant G. Barrett Rich, aide-de-camp, with rank from November 1, vice G. A. Williams, promoted.

Third Infantry—Frederick Lambert, captain, with rank from October 2, vice H. W. Fowler, declined; Nicholas Herd, second lieutenant, with rank from October 2, vice S. P. Hunt, declined.

Eighth Infantry—Edward E. Mulligan, second lieutenant, with rank from February 17, vice Fred. O. Johnson, commission vacated by General Order No. 29, 1870.

Ninth Infantry—George Thompson, assistant surgeon, with rank from April 7, vice Geo. Needham, resigned.

Tenth Infantry—John Burn, lieutenant-colonel, with rank from October 27, vice D. S. Benton, promoted; Edward K. Rogers, major, with rank from October 27, vice John Burn, promoted; Wm. E. Fitch, first lieutenant, with rank from September 28, vice G. W. Walker, resigned; John T. Jones, second lieutenant, with rank from September 28, vice John A. Browne, resigned; James S. Bailey, surgeon, with rank from November 18, vice D. M. Stimson, resigned.

Eleventh Infantry—John C. Endries, first lieutenant, with rank from June 28, vice Joseph Orsah, resigned; Robert Gross, second lieutenant, with rank from June 28, vice J. C. Endries, promoted.

Twelfth Infantry—Edward White, surgeon, with rank from September 26, vice G. M. Weeks, removed from State; Robert Taylor, assistant surgeon, with rank from September 26, vice E. White, promoted.

Nineteenth Battalion of Infantry—James T. Joslin, adjutant, with rank from September 13, vice J. P. Vought, removed from district.

Twenty-second Infantry—Charles F. Gamble, first lieutenant, with rank from October 2, vice Edward Russell, resigned; William H. Beckwith, second lieutenant, with rank from October 2, vice Charles F. Gamble, promoted; Wilnot M. Dunning, second lieutenant, with rank from October 11, vice Theo. P. Austen, resigned.

Twenty-fourth Infantry—Charles G. Clark, assistant surgeon, with rank from October 12, vice James C. Hutchinson, retired with former colonel.

Twenty-fifth Infantry—Frederick Schieffelder, captain, with rank from August 9, vice D. J. Buenger, resigned.

Twenty-eighth Infantry—Albin Gustave Pape, adjutant, with rank from November 1, vice Joseph T. Schmidt, resigned; Adolph Wilson, second lieutenant, with rank from May 25, vice John Williams, promoted.

Forty-seventh Infantry—Henry Hasler, adjutant, with rank from November 13, vice Guy F. Gosman, resigned.

Seventy-first Infantry—Gerard Botta, captain, with rank from August 24, vice Jos. A. Wise, resigned; Martin L. Vantine, second lieutenant, with rank from July 7, vice J. E. Davenport, promoted.

Seventy-fourth Infantry—Henry B. Mulligan, first lieutenant, with rank from October 11, vice A. C. Hudson, resigned.

#### THE BELGIAN FIELD ARTILLERY.

BY CAPTAIN A. NICAISE.

Translated, with notes, by O. E. MICHAELIS, First Lieutenant Ordnance Corps, Brevet Captain U. S. Army.

THE new material of our artillery is so well known as to render detailed description unnecessary; this however does not apply to its ballistic qualities, concerning which certain military writers have promulgated the strangest, most unfounded views.

Although General Soudain de Niederwerth has ably refuted the criticisms which our guns have called forth (see No. 209 of the *Journal de l'Armée Belge*), they are still stumbling-blocks to some of our comrades.

To remove these and to prove that our new artillery possesses in the highest degree all the advantages of the old smooth-bore system, independently of precious qualities peculiarly its own, is the object of the comparison we are about to make.

It may be well to state that our mounted artillery consists of eight-gun batteries, and our horse artillery of six.

All our pieces are of steel, and breech-loaders. The division artillery is composed of mounted batteries with rifled 4-pounders. The divisions of the reserve have mounted batteries with rifled 6-pounders. The mounted artillery of the reserve is made up of rifled 4 and 6-pounder batteries. The horse artillery batteries have rifled 4-pounders.

To show the qualities of this ordnance we will compare it with our old smooth-bore field-pieces, and with the rifled artillery of the principal States of Europe, especially with that of France, whose gun may be taken as the standard muzzle-loader.

Before proceeding with this comparison, we will mention that our old field material consisted; 1st, of 12-pounder smooth-bore guns, bronze; 2d, of 6-pounder smooth-bore guns, bronze; 3d, long 24-pounder howitzers, bronze; 4th, long 24-pounder gun-howitzers, bronze; four pieces which have been replaced by two, a reduction the advantage of which is patent.

In order to judge the efficacy of our 4 and 6-pounders, we will consider them under the following heads: Accuracy, curve of trajectory, effect of shell and shrapnel, effect of canister, penetration, range, rapidity of fire.

#### I. ACCURACY.

Accuracy is the distinctive feature of the new artillery. The relation of the mean vertical and horizontal deviations to the mean shot\* proves this.

The following table gives the mean deviations in height and direction of our rifled and old smooth bore, and of the French rifled field guns.

Distances.	Metres.	Yards.	Belgian 12-pdr., s.b., firing solid shot.		French rifled 12-pdr., firing shell.		Belgian rifled 6-pdr., firing shell.		Belgian 6-pdr., s.b., firing solid shot.		French rifled 4-pdr., firing shell.		Belgian rifled 4-pdr., firing shell.	
			Mean Deviations.	In Direction.	Mean Deviations.	In Direction.	Mean Deviations.	In Direction.	Mean Deviations.	In Direction.	Mean Deviations.	In Direction.	Mean Deviations.	In Direction.
			In Height.	In Direction.	In Height.	In Direction.	In Height.	In Direction.	In Height.	In Direction.	In Height.	In Direction.	In Height.	In Direction.
400	437	437	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.
600	656	656	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.
800	875	875	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.
1000	1094	1094	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.
1200	1312	1312	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.
1400	1531	1531	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.
1600	1750	1750	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.
1800	1969	1969	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.
2000	2187	2187	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.
2200	2406	2406	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.
2400	2625	2625	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.
2600	2843	2843	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.
2800	3062	3062	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.
3000	3281	3281	0.92 feet.	4.63 feet.	0.48 feet.	0.48 feet.	0.49 feet.	0.49 feet.	4.86 feet.	1.15 feet.	0.49 feet.	0.49 feet.	0.49 feet.	0.49 feet.

\* The deviations of this piece have been calculated from the firing of Ordnance Boards and of batteries, both practice and field, between the years 1861 and 1869.  
† Results of French experiments (Aide-memoire of 1864).  
‡ Mean of results obtained on the firing ground in 1866 and 1867.  
§ Results of experiments executed in 1860 with a gun having less windage than the service piece.

From the above it is evident that at all distances the accuracy of the new rifled field-pieces is strikingly superior to that of our old smooth bore and the French rifled guns.

Practically the arm which has the least vertical deviation may be considered the most accurate, for generally

Note.—The 4 and 6-pounder guns have calibres of 3 and 3.50 inches respectively.—T.

\* In our service the position of the mean shot on the target has been generally called the centre of impact, though General Abbott in his "Siege Artillery" calls it "mean impact."

the targets in war are sufficiently wide to allow for considerable lateral deviation. We give (plates 1 and 2) some facsimiles of targets taken from among the journals of fire and representing the grouping of 4 and 6-pounder shells at various distances.

It will be observed that at 219 yards all the projectiles are grouped in a surface about  $\frac{1}{4}$  a yard square; at 437 yards in a surface about a yard square; up to 875 yards in a rectangle about 8.3 feet by 9.5 feet and at 2,406 yards, in a rectangle 18 feet by 33 feet for the 4-pounder, and 13 feet by 25 feet for the 6-pounder.\*

During experiments made in 1860, with an almost new 12-pounder smooth bore out of 10 solid shot, fired at 437 yards, 9 were grouped in a space 6.56 feet high by 20.87 feet wide; out of 25, fired at 875 yards, 14, in a space 8.20 feet by 83.47 feet; out of 25, fired at 1,094 yards, 17 in a space 10.66 feet by 65.29 feet; and finally at 1,312 yards, of 20 shots fired, 8 were grouped in a space 9.94 feet by 43.96 feet. These targets are shown in plate 3.

The percentages of hits at various distances for our new rifled and old smooth-bore guns are given in the following table:

Distances.		Direct Fire.				Ricochet fire.	
Metres.	Yards.	Target 9 ft. high by 30 ft. wide.*		Target 9 ft. high by 93 ft. wide.†		Target 10 ft. high by 213 ft. wide. (Scharnhorst experiments)	
		Rifled 6-pdr.	Rifled 4-pdr.	12-pdr., s.b.	6-pdr., s.b.	12-pdr., s.b.	6-pdr., s.b.
400	437	100	100	91	80	..	..
600	656	100	100	75	68	..	..
800	875	98	98	65	54	..	..
1000	1094	91	90	50	37	33	25
1200	1312	85	83	39	22	..	..
1400	1531	79	76	..	..	25	25
1600	1750	74	70	..	..	..	..
1800	1969	69	64	..	..	20	..
2000	2187	64	58	..	..	..	..
2200	2406	60	53	..	..	..	..
2400	2625	56	49	..	..	..	..
2600	2843	52	45	..	..	..	..
2800	3062	48	41	..	..	..	..
3000	3281	45	38	..	..	..	..

\* Experimental and annual school firing, and the field practice of batteries, from 1861 to the end of the field manoeuvres of 1869.

† Firing-ground report of 1861 (school practice).

An examination of this table shows that up to 1,094 yards our rifled guns fire more accurately than our old smooth bores up to 437 yards, and that at 3,281 yards they fire more accurately than the others at 1,312 yards.

The Scharnhorst experiments prove that the efficacy of the ricochet fire of round shot has been greatly exaggerated.

As a matter of interest we will compare the Belgian, French and Austrian rifled 4-pounders in respect to their chances of hitting an infantry front at different ranges. The necessary data have been drawn from the following sources: for the Belgian gun, from the reports of all direct shots fired by ordnance boards and by the batteries of our army in their annual field manoeuvres from 1862 to 1870; for the French, from the "Aide-memoire portatif" of 1864; and for the Austrian, from Captain Roderdanz's book on the Prussian artillery.

#### PERCENTAGE OF HITS ON A TARGET REPRESENTING A COMPANY OF INFANTRY IN LINE.

Distances.		Breech-loader.		Muzzle-loaders.	
Metres.	Yards.	Belgian 4-pdr.		French 4-pdr.	
		Belgian 4-pdr.	French 4-pdr.	Austrian 4-pdr.	
500	547	90	80	..	..
600	656	..	..	..	..
1000	1094	70	40	..	..
1080	1181	..	..	..	..
1380	1495	..	..	..	..
1500	1640	..	..	..	..
2000	2187	..	..	..	..
2500	2734	..	..	..	..
3000	3281	..	..	..	..

From these extracts, it appears that the Belgian gun, firing at 1,640 yards against a company of infantry deployed, gives twice as many hits as the French, and as many as the Austrian at 1,181 yards; and that at 3,281 yards, the Belgian gives 25 per cent. more hits than the French at 2,187 yards.

The figures heretofore given clearly prove then that the accuracy of the rifled breech-loader is superior to that of the smooth-bore and rifled muzzle-loader.

#### II. TRAJECTORIES.

It has often been affirmed, erroneously however, that the trajectories of our rifled guns are not sufficiently extended. Experience proves that, from 888 yards for the 4-pounder, and from 656 yards for the 6-pounder, the curves are flatter than those of the obsolete smooth bores, and at all distances, than those of the French rifled 4 and 12-pounders.

Although up to 888 and 656 yards the trajectories of our rifled guns are respectively a little more curved than those of the smooth bores, no inconvenience will result in actual warfare, since the former have up to 875 yards such a precision of fire that their projectiles are grouped in a rectangle, whose mean dimensions are  $3\frac{1}{2}$  feet by  $3\frac{1}{2}$  feet.†

\* General Abbott gives as the practice of the First Connecticut Artillery in the defence of Washington with 24-pounder siege gun smooth bore the following:

Out of 20 shot, fired at 550 yards, 12 were grouped in a circle of 20 feet diameter.

Out of 28 shot, fired at 950 yards, 16 were grouped in a circle of 20 feet diameter.

Out of 30 shot, fired at 1,030 yards, 7 were grouped in a circle of 20 feet diameter.

The 30-pounder Parrot grouped 9 shot at 1,080 yards in a circle of 60 feet diameter.

The 4.5 ordnance gun grouped 39 (out of 40) shot at 1,820 yards in a circle of 100 feet diameter, and at 2,220 yards, out of 10 shots fired, at 9 in a circle of 60 feet diameter.

The 12-pounder Whitworth grouped 5 shot at 2,220 yards in a circle of 80 feet diameter.

† Double the mean vertical and horizontal deviations given in the preceding table of deviations.



We give below for five different distances the "dangerous spaces" or useful lengths of trajectories before the first impact.

Guns.	Dangerous spaces or covered lengths in front of first impact.									
	At 437 yds.		At 656 yds.		At 875 yds.		At 1312 yds.		At 1750 yds.*	
	Infantry front.	Cavalry front.	Infantry front.	Cavalry front.	Infantry front.	Cavalry front.	Infantry front.	Cavalry front.	Infantry front.	Cavalry front.
Belgian rifled 4-pdr.	485	485	561	435	171	345	95	161	61	97
French rifled 4-pdr.	369	369	194	328	129	168	68	107	41	64
Belgian 6-pdr., s. b.	447	447	199	313	118	195	67	86	37	57
Belgian rifled 6-pdr.	385	385	235	410	156	256	90	153	64	100
French rifled 12-pdr.	283	283	187	259	114	175	56	80	37	57
Belgian 12-pdr., s. b.	518	518	224	410	139	230	66	102	..	..

\* We have stopped with the smooth-bore trajectories at 1,312 yds., because beyond that distance their fire is no longer effective.

The study of this table proves that for all ranges the Belgian rifled field-pieces, as we have already mentioned, have much greater dangerous spaces than the French; that at 437 yards the dangerous space of the Belgian 4-pounder (against infantry) is 126 feet greater than that of the French; that at this same distance the dangerous space of the Belgian 6-pounder is 102 feet greater than that of the French 12-pounder; and that at 1,750 yards the dangerous spaces of the Belgian guns still exceed by 20 and 27 feet those of French.

If we compare the dangerous spaces of our new and old guns, we find that at 437 yards the rifled 4-pounder covers 37 feet more than the 6-pounder smooth bore, while, on the other hand, the 12-pounder smooth bore covers 133 feet more than the rifled 6-pounder, and 33 feet more than the 4-pounder. At 656 yards the dangerous space of the 4-pounder is 52 and 17 feet respectively greater than that of the 6 and 12-pounders smooth bore, and up to this distance the rifled 6-pounder has the same as the 12-pounder smooth bore.

From 383 yards for the rifled 4-pounder, and from 656 yards for the rifled 6-pounder, the dangerous spaces of our new guns are therefore greater than those of the obsolete smooth bores. The advantage which the 12-pounder smooth bore possesses in the flatness of its trajectory at short ranges is of little moment, for the experiments made at the Brasschaet firing-ground demonstrated that this gun at 437 yards puts only 80 out of 100 shots in a target representing a company of infantry (6 feet by 98 feet), while at the same distance the rifled guns group without fail all their projectiles in a space less than a yard square. The great precision of fire of our rifled guns amply compensates for the disadvantage of a lesser dangerous space at short ranges, a disadvantage which disappears almost entirely when we reflect that under such circumstances canister is habitually employed.

At 1,750 yards the dangerous space of our 4-pounder is greater than that of the 6-pounder smooth bore at 1,312 yards, and, at these distances of comparison, that of our rifled 6-pounder is (within 2 feet) as great as that of the 12-pounder smooth bore.

In the comparison just made we have regarded the dangerous space of only the descending branch of the trajectory; if in addition we take into account the ascending branch of the first ricochet curve, the advantages of our rifled guns are still further enhanced, for from 883 and 656 yards respectively the angles of fall and rebound of the 4 and 6-pounder oblong projectiles are less than those of the 6 and 12-pounder spherical.

The dangerous space of the ascending branch mentioned above is augmented considerably in our new pieces by the explosive projectiles used with them,\* which put at least one-half their fragments in the target, while the round shot passes harmlessly over it.

Knowing the initial and remaining velocities at various distances enables us to verify what has been said concerning the dangerous spaces of our new field ordnance. The table below gives the velocities of these guns, deduced from numerous ballistic experiments executed on the Brasschaet firing-ground, and those of the French, taken from the *Aide-mémoire portatif* of 1864:

Distances.		Initial and Remaining Velocities.*					
Metres.	Yards.	Belgian Rifled 4-pdr. Shell. Weight = 9.5 lbs.	Belgian Rifled 6-pdr. Shell. Weight = 10 lbs.	French Rifled 4-pdr. Shell. Weight = 8 1/2 lbs.	French Rifled 6-pdr. Shell. Weight = 20 lbs.	Belgian 12-pdr. S. B. Solid Shot. Weight = 12 1/2 lbs.	French 12-pdr. S. B. Solid Shot. Weight = 12 1/2 lbs.
0	0	Feet. 1220	Feet. 1118	Feet. 1066	Feet. 1007	Feet. 1608	Feet. 1608
200	219	1165	1096	1010	974	1316	1316
400	437	1090	1030	938	942	1092	1092
600	656	1043	1010	909	909	922	922
800	875	997	978	863	876	791	791
1000	1094	958	945	817	843	683	683
1200	1312	919	915	775	810	594	594
1400	1531	883	889	738	778	..	..
1600	1750	850	863	705	746	..	..
1800	1969	817	837	673	717	..	..
2000	2187	784	810	640	689	..	..
2500	2734	709	745	558	623	..	..
3000	3281	643	679	492	558	..	..
3500	3828	577	614	..	..	..	..
4000	4375	512	564	..	..	..	..

\* I am indebted for the conversion of this and the following table to Captain W. A. Marye, Ordnance Corps.—Tr.

From these data it appears that at all distances the velocity of our shell is greater than that of the French, from which it necessarily follows that the trajectories of the former are flatter than those of the latter.

Although the initial velocity of the 12-pounder round

\* No solid shot are used with the rifled 4 and 6-pounders, which, it may be well to remark here, correspond to our 3 and 3 1/2-inch guns.—Tr.

shot is greater than that of the oblong shell, it is outstripped by the 4-pounder shell at 437 yards, and by the 6-pounder at 547 yards. The mass corresponding to a unit of surface exposed to the resistance of the air is less in the 12-pounder round shot than in the oblong projectiles; hence it loses its initial velocity more rapidly, and its trajectory, flatter at the origin than that of the rifled shell, becomes, according to the calibre of the latter, more curved at 547 and 656 yards.

Although the trajectories of our rifled field-pieces are flatter at all ranges than those of the French, and from 547 and 656 yards also flatter than those of our obsolete smooth bores, we are by no means sure that they have attained the acme of their power in this respect.

Notwithstanding that there is no need of increasing the flatness of our trajectories, nevertheless we may, if deemed desirable, use heavier charges, for experiments made with the 4-pounder prove that it may be fired with 1 1/2 pounds of powder (about one-fifth the weight of the projectile), giving it an initial velocity of 1,329 feet.

The figures arranged below afford a convincing proof that within the limit of good ranges no other European field artillery possesses so flat a fire as the Belgian.

The English rifled 12-pounder is the only gun which at great ranges has a longer dangerous space.

#### DANGEROUS SPACES OF RIFLED FIELD ORDNANCE. (Infantry Front.)

Distances.		Belgian Rifled 4-pdr.	Prussian Rifled 4-pdr.	Austrian Rifled 4-pdr.	French Rifled 4-pdr.	Belgian Rifled 6-pdr.	Prussian Rifled 6-pdr.	English Rifled 12-pdr.	French Rifled 12-pdr.
Metres.	Yards.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
600	656	251	246	185	194	225	228	210	157
1000	1094	..	..	86	..	..	115	117	..
1100	1203	..	..	111	..	..	..	..	..
1200	1312	95	..	..	68	90	..	..	56
1500	1640	..	61	46	..	..	66	72	..
1600	1750	61	..	41	64	..	..	..	37
1900	2078	..	54	..	..	..	..	..	..
2000	2187	42	..	29	..	47	42	51	..

The Belgian 4-pounder has, then, a greater dangerous space than any other rifled gun of the same calibre, and the 6-pounder is only surpassed in this respect by the English rifled 12-pounder at ranges between 1,640 and 2,000 yards.

#### III. EFFECT OF PROJECTILES.

Our old field ammunition included solid shot, shrapnel,\* and canister, our new, shell, shrapnel and canister; our oblong shell thus replacing the old round shot.

#### SHELL PRACTICE.

In firing against troops the effect of shells depends in part upon the number of fragments produced by their explosion.

The shell of the Belgian 4-pounder gives a mean of 43 fragments.

The shell of the Austrian 4-pounder gives a mean of 40 fragments.

The shell of the French 4-pounder gives a mean of 24 fragments.

The shell of the Austrian 8-pounder gives a mean of 60 fragments.

The shell of the Belgian 6-pounder gives a mean of 45 fragments.

The shell of the French 12-pounder gives a mean of 22 fragments.

We give below a recapitulation of the results of field practice (counting successful and unsuccessful shots) from 1864 to 1869.

Distances.		Number of fragments per shot.			
		4-pdr. shell.		6-pdr. shell.	
Metres.	Yards.	Infantry front.	Cavalry front.	Infantry front.	Cavalry front.
400	437	11	15	11	16
600	656	9	14	11	16
800	875	8	11	10	15
1000	1094	8	11	10	14
1200	1312	7	10	10	13
1400	1531	6	9	9	12
1600	1750	6	8	8	12
1800	1969	5	7	7	11

These results prove that the fire with shell is much more "murderous" than the direct fire with round shot. Austrian trials with shell against a target 12 1/2 by 32 1/2' gave the following:

Distances.		No. of fragments.	
Metres.	Yards.	4-pdr. shell.	8-pdr. shell.
379	414	11	15
758	829	12	15
1516	1658	4	11
2274	2487	3	4

We do not know whether these figures represent the mean effect of the successful shots only, or of both successful and unsuccessful; admitting the latter, however, the more favorable supposition for the Austrian projec-

\* The poverty of our technical military language is proverbial; therefore to afford in one instance an opportunity of escaping from tiresome circumlocution, I take the liberty throughout this translation of using the term "case" shot in a generic sense. A use that I hope will not be criticised too severely by ordnance and artillery officers.

Taken thus, case shot is divided into two classes, "shrapnel" and "canister," and these latter again into varieties, "oblong" and "spherical" shrapnel, and "rifled" and "smooth-bore" canister.—Tr.

tiles, and then comparing, we find that the explosive effect of our shell is greater.

The French 4 and 12-pounder shells are less effective than the Austrian 4 and 8-pounder, as shown by the subjoined results of trials at La Fère against four rows of targets 6 1/2 feet high, by 164 feet wide:

5-6 fragments for the 12-pounder shell fired at 984 yards.

1-8 fragments for the 12-pounder shell fired at 2,078 yards.

5-0 fragments for the 4-pounder shell fired at 1,203 yards.

1-8 fragments for the 4-pounder shell fired at 2,460 yards.

#### SHRAPNEL PRACTICE.

It has often been affirmed that the effect of the oblong shrapnel is inferior to that of the spherical; this is disproved by the following summary of the mean number of balls and fragments per shot (including successful and unsuccessful projectiles) for the two kinds:

Distances.		Field fire from 1864 to 1869.				Practice fire from 1852 to 1853.			
Metres.	Yards.	Rifled 4-pdr.		Rifled 6-pdr.		6-pdr., s. b.		12-pdr., s. b.	
		Infantry front.	Cavalry front.	Infantry front.	Cavalry front.	Infantry front.	Cavalry front.	Infantry front.	Cavalry front.
400	437	24	35	25	37	19	13	21	30
600	656	22	32	24	34	9	12	18	26
800	875	20	29	24	36	8	11	17	24
1000	1094	18	27	24	35	5	7	13	19
1200	1312	16	24	23	34	4	5	12	17
1400	1531	15	22	23	33	..	..	..	..
1600	1750	14	20	22	32	..	..	..	..
1800	1969	12	18	21	31	..	..	..	..

Before putting into words the facts deducible from this table, we must remark that it is founded upon the field fire of oblong, and the practice fire of spherical shrapnel, the latter being furnished with our most recent and best fuse, that of 1849. Although a comparison based on these two fires is to the disadvantage of the rifled guns, we yet find:

First, that at all ranges the effects of the oblong shrapnel are very much superior to those of the spherical.

Second, that up to 1,312 yards the oblong shrapnel loses little of their efficacy, while the reverse is the case for the spherical.

Third, that up to 1,969 yards the oblong shrapnel still give respectively as many balls and fragments as the spherical at 437 yards.

According to the *Aide-mémoire portatif* the shrapnel of the French rifled 4-pounder give in a target 8 1/4 by 13 1/4'.

24-2 balls and fragments at 656 yards.
25-7 " " 875 "
21-1 " " 1,004 "
20-8 " " 1,312 "
16-7 " " 1,531 "

The comparison of these figures with those indicating the effects of the Belgian 4-pounder oblong shrapnel on cavalry front (9 feet) makes the superiority of the latter evident.

We will conclude this branch of our subject by giving the exact number of balls and fragments produced by the bursting of our new and old shrapnel:

The oblong 6-pounder gives 95 to 96 balls, and 36 to 37 fragments. Total 132 balls and fragments.

The oblong 4-pounder gives 62 to 63 balls and 32 to 33 fragments. Total 95 balls and fragments.

The spherical 12-pounder gives 100 balls and 10 fragments. Total 110 balls and fragments.

The spherical 6-pounder gives 45 balls and 7 fragments. Total 52 balls and fragments.

#### CANISTER PRACTICE.

Heretofore it has been currently believed that the canister practice of rifled field guns is inferior to that of the 6 and 12-pounder smooth bores; but this position is no longer tenable in the light of the conclusions arrived at from numerous comparative trials instituted by various countries. We are compelled to accept these as decisive, for no results of actual war permit the establishment of the superiority of the one over the other.\* The 124 canisters fired during the whole campaign of 1866 by the 348 smooth bore guns of the Prussian artillery cannot in truth give any indication in regard to the effects produced by this fire.

We give a resumé of the experiments alluded to above in the following tables:

Distances.		Dutch trials of 1828.		Swiss trials from 1864 to 1866.	
Metres.	Yards.	12-pdr., s. b. Canister of 41 balls.	6-pdr., s. b. Canister of 41 balls.	12-pdr., s. b. Canister of 41 balls.	Rifled 8-pdr. Canister of 54 balls.
		Hits.	Hits.	Hits.	Hits.
300	328	..	..	17.20	35.80
375	410	17.20	..	..	..
450	492	15.60	12.20	14.70	30.60
525	574	14.00	9.60	..	..
600	656	12.80	6.40	13.40	25.80

\* The canister practice of our light 12-pounder (weight 1,225 lbs., canister of 27 balls), is regarded with great favor by our artillerymen, a predilection created by the experience of our war, during which much use was made of this projectile.

Our officers are consequently loth to give up a piece which has stood them in such good stead (see late numbers of the ARMY AND NAVY JOURNAL); they should, however, bear in mind, when submitting to the fiat of the most recent experience, which has rele-



		French trials.			
Distances.		12-pdr., s. b., can- ister of 41 balls.	8-pdr., s. b., can- ister of 41 balls.	Rifled 12- pdr., can- ister of 98 balls.	Rifled 4- pdr., can- ister of 41 balls.
		Target 6.56 feet by 98.43 feet.			
Metres.	Yards.	Hits.	Hits.	Hits.	Hits.
200	219	15.50	13.00	....	....
300	328	13.00	11.00	....	15.00
400	437	9.00	9.50	38.83	13.00
500	547	6.20	5.50	21.60	10.50
600	656	6.00	5.53	5.30	6.40

		Prussian trials.			
Distances.		12-pdr., s. b., can- ister of 45 balls.	6-pdr., s. b., can- ister of 41 balls.	Rifled 6- pdr., can- ister of 41 balls.	Rifled 4- pdr., can- ister of 43 balls.
		Target 6.17 feet by 98.43 feet.			
Metres.	Yards.	Hits.	Hits.	Hits.	Hits.
225	246	17.00	14.70	17.70	19.50
300	328	14.33	13.00	16.60	16.40
375	410	14.00	12.00	16.20	16.80
450	492	12.00	10.00	11.60	13.50

		Austrian trials (at Simmering).				Belgian trials.	
Distances.		12-pdr., s. b., can- ister of 72 balls.	Rifled 8- pdr., can- ister of 67 balls.	6-pdr., s. b., can- ister of 60 balls.	Rifled 4- pdr., can- ister of 56 balls.	Rifled 4- pdr., can- ister of 61 balls.	Rifled 6- pdr., can- ister of 115 balls.
		Target 9.32 feet by 105 feet.				Target 9.17 feet by 105 feet.	
Metres.	Yards.	Hits.	Hits.	Hits.	Hits.	Hits.	Hits.
150	164	....	....	....	....	....	50.00
200	219	....	....	....	....	26.60	....
225	246	22.20	21.80	20.30	21.20	....	....
250	273	....	....	....	....	....	41.00
300	328	....	....	15.90	15.00	19.50	....
375	410	13.50	14.50	10.79	13.10 (shrapnel)	....	....
490	437	....	....	....	....	15.60	39.00
450	492	11.50	26.00 (shrapnel.)	....	....	....	....

All these comparative trials prove that the canister practice of rifled guns is at least as effective as that of smooth bore; the results of the Swiss and Austrian in this respect are remarkable.

The Swiss experiments actually show, as stated by Colonel Tessen in the "Revue de Technologie Militaire" of 1865, "that the efficacy of the canister of the steel breech-loading 8-pounder, is very nearly double that of the 12-pounder smooth bore; a very noteworthy fact when we consider that the 8-pounder contains only one-third more balls than the 12-pounder, and that the former weigh only half as much as the latter, with the exception of five, equally heavy.

The latest Austrian experiments, executed at Simmering, near Vienna, in March, 1869, are also conclusive as to the superiority of the rifled canister.

From 437 to 875 yards, on ground favorable for case practice, our shell and shrapnel give effects incomparably superior to those of the old canister, which can only be employed advantageously at distances not exceeding 547 yards; as up to this range the fire of the new small arms is still very dangerous to the gunners, few occasions will offer in actual warfare where artillery can open so near the enemy. Generally, it may then be affirmed that at all distances wherein artillery can act usefully, the case practice of the rifled guns is superior to the canister of the superseded smooth bores.

In concluding this branch of our investigation, we cannot do better than to quote the comments of General Soudain de Niederwerth upon the comparative trials just cited.

After giving the results of these experiments, our author adds: "These are conclusive in favor of the case practice of our new ordnance. Our adversaries, however, do not consider themselves vanquished; they object as usual that these are only the results of the firing ground; that the ranges were accurately measured; that the ammunition was chosen with care; all conditions which do not exist in war. They forget that these points apply also to the smooth bores. In their eyes, canister fire will always be the *ne plus ultra* of what artillery should do on the battle-field; and as they suppose, though we have just seen that there is no foundation whatever for this supposition, that rifled guns are incapable of delivering this fire well in war, they propose nothing less than a return to the obsolete guns.

Artillery should launch itself upon the enemy at a gallop, and rout them with canister; these are the true tactics, and they wish nothing to supersede them.

Arkolay goes so far as to treat under the rubric *Feigheitsheorie* (theory advanced by cowards) every other mode of action.

These ideas were the rage at an hour when the world was yet under the charm of the artillery charges, brilliant in many instances, made on the battle-fields of the

gated this whole class of ordnance to arsenal collections, that at present they can only compare the effect of the 12-pounder canister to that of our single rifled field gun, the muzzle-loading 3-inch, and that during the civil war, our opponents were not supplied with the superior small arms and field artillery, since adopted by all great military nations.

First Empire, but whether they are still applicable to-day is a question that merits study.

The infantry of Napoleon's day could hardly open fire until within 500 or 600 paces of the enemy; for at a greater range, its fire was deprived of all efficacy; and only under 300 paces was it really deadly.

The canister practice of smooth bores, very effective between 300 and 600 paces, was then available at a distance where little was to be feared from musketry.

This circumstance explains the tactical importance of canister at that period, and fully justifies the old artillerymen's preference of it to every other variety of field fire.

But this importance has steadily diminished as the range and rapidity of infantry fire have been increased by successive improvements in its arm, from the old flint-lock to the breech-loader.

Unless under very exceptional cases, the artillery of to-day cannot come within good canister range without being exposed to complete destruction, for the sphere of infantry action has extended itself to 875 to 984, and even to 1,094 yards, and the velocity of its fire has been considerably augmented. Let us note that at these distances infantry can easily, owing to undulations in the ground, or other shelter, protect itself from artillery fire.

We may then affirm, without fear of contradiction, that the tactical importance of canister is not at present what it was in the time of Napoleon.

During the war of 1866, Austrian batteries, which attempted to use canister, were forced to retire after suffering enormous loss, and often without having succeeded in firing a single round.

At Sadowa, an Austrian rifled battery, carried away by the enthusiasm of the moment, dashed forward to within a short distance of the enemy's infantry; this battery was so hardly dealt with that it was not able even to fire a shot, and its leader atoned with his life the fault he had committed.

This kind of fighting, more rash than rational, has ever been condemned by all who have a sane idea of the use of artillery on the battle-field.

We will prove this by instancing Prince Augustus of Prussia's order to the artillery, dated May 10, 1813:

"It has been reported to me that several artillery officers have ventured with the pieces entrusted to them within one or two hundred paces of the enemy's infantry. Such conduct does honor to their courage, but exposes men and horses to certain destruction, and guns to capture, as experience has often proved. Battery commanders will see to it that pieces are not put in battery less than 300 or 400 paces from the enemy; that is to say, beyond the radius of action of infantry arms. Very peculiar circumstances alone can justify an exception to this rule."

It is then beyond the effective range of the present small-arm, that is beyond 1,094 yards, that artillery ought to be able to act efficiently on the battle-field.

Of two systems of artillery, that one will evidently be the better, which, under these conditions, exercises the most destructive action. A glance at the tables of fire will convince that it is precisely from this distance that rifled guns exert their greatest power, while smooth bores give only mediocre results, results that diminish rapidly as the ranges increase. Rifled artillery, on the other hand, has the same effect fired at 1,094, at 1,312, or even at 1,750 yards.

We have then proved that rifled pieces are the very ones suited to the artillery, considering the present armament of infantry."

#### IV. FUSES.

The shell and shrapnel of our rifled field ordnance are furnished with a percussion fuse, similar to the Prussian; with our spherical shrapnel we used the Bormann. Each of these fuses has its advantages and disadvantages; the first has been subjected to ill-founded censure, and the qualities of the second have occasionally been exaggerated. The percussion fuse has many points in its favor; it assures the bursting of the projectile; it can be used for all ranges, be they never so great; it admits, a very important desideratum in war, of estimating distances, and of correcting the error of the estimation; and it augments besides the results of firing by adding great moral to the physical effect, due to the explosion of the projectile in front of or among troops. Its only inconvenience is its inability to cause the bursting of the projectile, before it has touched the ground, thus rendering the effects of fire dependent upon the nature and conformation of the soil at the point of impact.

This certainly is a defect; in practice, however, it has only influenced shrapnel fire, since these fuses have been retained for shell in all armies that had introduced them before the Bohemian war.

Time fuses have the advantage of being independent of the ground, and of furnishing a cone of dispersion whose apex is above the target. It is generally admitted that such a cone is more extended than the one given by a projectile which bursts after impact, and which consequently acts from below, upward.

But the use of these fuses is attended with drawbacks which greatly diminish the importance of this advantage. They are entirely dependent upon the exactness of their adjustment, and even when properly adjusted, they give premature or tardy explosions without assignable reason; besides, they afford no means of estimating at sight the distances at which the projectiles burst, and consequently no criterion for correcting them, which is certainly a grave disadvantage. But their crowning defect, in the opinion of those who have used them in the field, is that they require an adjustment almost impossible under fire.

One of the most distinguished generals of the French army, who held an important command during the Italian campaign, has assured us that, notwithstanding the ease with which the fuse of 6-graduations may be adjusted (in this respect certainly one of the simplest in use), the gunners rarely cut it at the desired time; they would do it either incorrectly, or not at all.

A general officer of the Prussian artillery, whose scientific and military reputation is well-known, employed

time shrapnel in the Schleswig-Holstein campaign, and is of the opinion "that shrapnel with the percussion fuse is better for war purposes, whatever may be said of the influence of the conformation of the ground on the fire."

Austrian officers who took part in the war of 1866 have informed us that when firing shrapnel they had rarely been able to judge whether the point of explosion was properly located or not.

This was hardly the case, however, at Sadowa, where all the distances had been previously measured and marked, and Benedek's batteries could consequently use this projectile advantageously. Since 1863 they have substituted, in their complement of field ammunition, for a portion of the time shrapnel, percussion shell.

The results of Belgian trials with these two kinds of fuses are worthy of citation.

In 8,245 4 and 6-pounder oblong shell and shrapnel fired from 1863 to 1869, there have occurred:

128 premature explosions, or 1.55 per cent.

433 tardy " " 5.25 "

131 miss-fires " " 1.59 "

In all 692 fuses (8.39 per cent.) failed to give the proper effect.

From 1849 to 1864 there were fired at Brasschaet, 7,540 spherical shrapnel of the latest and best model, that of 1849; of this number 1,919 failed, either by premature or tardy explosions, or by miss-fires.

25.45 per cent. of the fuses were therefore unsuccessful.

In the field fire of the light batteries from 1854 to 1864, in 2,588 spherical shrapnel, model 1849, all supplied with the same time fuse, there were:

196 premature explosions, or 7.57 per cent.

226 tardy " " 8.74 "

294 miss-fires " " 11.36 "

In all 716 (27.67 per cent.) failed.

The reports of the *practics* firing with spherical shrapnel, model of 1849, from 1853 to 1861, show that in 3,572, there were:

143 premature explosions, or 4.00 per cent.

368 tardy " " 10.31 "

300 miss-fires " " 8.39 "

In all 811 (22.70 per cent.) failed.

These abstracts show that the time-fuse of the latest model, used with smooth bores, has been unsuccessful in 25.45 per cent. of the projectiles, and the percussion, with the rifled 4 and 6-pounders, in only 8.39 per cent.\* It follows, then, that on the firing-ground three times as many spherical case have missed fire with the time fuse, as oblong, with the percussion.

It will doubtless be objected that percussion fuses do not act in the field as on the practice ground; we admit this; neither are time fuses adjusted under fire as well as in experimenting, and it must further be borne in mind that these latter, even when properly cut, give irregular explosions; in confirmation of which the Schleswig-Holstein and Bohemian campaigns afford abundant testimony. Captain Roerdansz, of the Prussian artillery, thinks that time shrapnel fire is of doubtful efficacy; he states further:

"At Düppel, the Prussians fired 12-pounder time shrapnel; the effect of the projectile and the proper point of explosion were very difficult of observation, and the results dubious.

"The fire of the enemy's heavy guns was not at all telling, chiefly owing to the employment of time fuses."

Captain Mueller, of the Austrian artillery, comes to the conclusion, from the experience of the Danish war, "that time shrapnel is an excellent projectile against troops in closed columns, when the range has been determined beforehand, does not exceed 1,500 paces, and the explosion occurs from 20 to 60 paces in front of the target.

We have already remarked that immediately after the Bohemian war, the Austrians diminished the number of shrapnel in their field equipment, which must be accepted as affording an evident proof in favor of percussion shell.

It has frequently been affirmed that in firing percussion projectiles it is absolutely necessary to know the exact range, in order to prevent the projectile's bursting too near the target. This statement has no better basis than the others, since it has been proved that even when bursting 164 feet in front of the object aimed at, our percussion projectiles still give good results. In fact, an oblong 6-pounder shell, fired at 1,969 yards, and exploding 141 or 164 feet in front of the target, makes 5 hits in a cavalry front, and 4 in an infantry; at the same distances, the 4-pounder makes 4 and 3 hits respectively.

At 1,531 yards an oblong 6-pounder shrapnel, bursting 164 feet in front of the target, puts 18.2 balls and fragments into cavalry front, and 11 into infantry; at 1,969 yards, and 164 feet in front, the 4-pounder puts 11.5 into cavalry, and 7.2 into infantry.

No report has been made of projectiles exploding at more than 164 feet, because, owing to the great accuracy of our new guns, they can always be made to strike near the target; still it has been ascertained that the shell throws its fragments several hundred yards to the front and sides.

According to the French "*Aide-Mémoire*" oblong

\* General Abbott, U. S. Engineers, in his "Siege Artillery in the Campaigns against Richmond," gives the following as the "Service test" of the principal United States fuses:

PERCUSSION.		Out of 5,946 observed, 5,059 burned well, or 85 per cent.	
Time	2,820	2,143	75
SCHENK.	2,141	1,775	83
PERCUSSION..	161	89	55
COMBINATION	232	143	71
DYER.	188	99	53
ABSTEDAM.	41	30	73
TICE.	88	75	85
COMBINATION..	654	598	77
SAWYER.			
COMBINATION			
BORMANN.			
Time			

The McIntyre combination fuse, invented too late for use in the war, bid fair, from the experiments made at Washington, to have proved itself the most successful of all.—Tr.



time shrapnel ought, in order to produce their maximum effect, be made to burst 164 or 328 feet in front of the target; but how can this distance be ascertained in the field?

Still, under certain circumstances, the time fuse gives better results than the percussion, especially with shrapnel; this projectile would attain its greatest value in war, were it provided with a combination fuse, or with two fuses, so that its explosion might be brought about either in the air, or on striking the ground.

#### V. FORCE OF IMPACT OR PENETRATION OF PROJECTILES.

The comparison of the force of impact of oblong and spherical projectiles furnishes an additional proof of the superiority of rifled guns.

Under this head we will only examine the effects of the rifled 6-pounder and of the 12-pounder smooth bore, inasmuch as the rifled 4-pounder and 6-pounder smooth bore are employed exclusively against troops. We will, however, mention that, in trials made in France against an oak butt 5½ feet thick, the 4-pounder oblong shell penetrated 2.69 feet, and the 12-pounder round shot only 2.66 feet.\*

So far, then, as regards penetration in wood the French 4-pounder shell is not inferior to the 12-pounder shot; and, since the Belgian 4-pounder shell has greater velocity and weight than the French, we may, on very good grounds, affirm that its action against fixed obstacles is at least equal to that of the 12-pounder smooth bore—a very important consideration in view of the attack on field entrenchments. As an offset, though, we must remark that experiments instituted at Magdeburg in 1864 demonstrated that the 4-pounder shell was not adapted for breaching.

The percussive effect of a projectile is a function of its weight and velocity of impact; and we have already shown that the velocity of the 12-pounder shot, though greater at the origin than that of the 6-pounder projectile, is less at the distance of 547 yards.

At 437 yards the *vis viva* of the former is 12½ lbs. × 1,092² ft. — 281.8 ft.-tons; and of the latter, 32.155 ft.

15 lbs. × 1,050² ft. — 257.3 ft.-tons; showing that already at this range the 6-pounder shell can do more work than the 12-pounder shot.

The calibres of the Belgian rifled 6-pounder and the French rifled 12-pounder are too dissimilar to admit of comparing the force of impact of their projectiles; but, if we take the Belgian rifled 12-pounder, the figures below show that its living force at all distances is greater than that of the French:

	Belgian Rifled 12-pounder.	French Rifled 12-pounder.
Weight of shell.....	32 lbs.	25 lbs.
Initial velocity.....	1,132 ft.	1,007 ft.
Velocity at 547 yards.....	1,050 ft.	925 ft.
Velocity at 1,094 yards.....	978 ft.	843 ft.

We must also take into consideration the destructive effect of the explosion of the oblong projectile, and, further, that, from its very form, it is better adapted for penetration than the round shot.

Hence, in firing against fixed obstacles, all the advantages are on the side of the rifled gun.

The Swiss experiments, carried on at Thun in 1865, also confirm this conclusion. 12-pounder smooth bore solid shot and 8 and 12-pounder oblong shell were fired at 943 yards against a solid limestone wall 9.84 feet high, 3.46 feet thick in one half, 3.44 in the other, strengthened by buttresses 3 feet thick.

The official report of these experiments contains this statement: "This trial proves most evidently the rapidity with which the rifled 8-pounder shatters a wall which would long resist the 12-pounder smooth bore field gun."

The Swiss 8-pounder oblong projectile weighs 17½ lbs., and with a charge of 2 1-5 lbs., has an initial velocity of 1,089 feet; the Belgian 6-pounder weighs 15 lbs., and has an initial velocity of 1,148 feet.

The initial living forces of the two projectiles are, then, respectively:

17½ lbs. × 1,089² — 323 ft.-tons for the first, and 32.155 ft.

15 lbs. × 1,148² — 307 ft.-tons for the second—quantities differing so little that we may without sensible error apply the results of the above experiments to our rifled six-pounder.

The Magdeburg trials in 1863 with the Prussian rifled 6-pounder showed that its shell is very effective in levelling field earthworks. Two of these pieces, firing at 656 yards, with loaded and unloaded shell, against a heavy clay parapet, 10 1-4 feet thick, effected, after twenty-six rounds, a breach 10 1-4 feet wide, 4 feet deep in front, and with a mean depth of 2 3-5 feet; several unloaded shell passed entirely through, from 2 to 3 feet below the crest, where the thickness varied from 10 3-4 to 11 4-5 feet. At the same range, the 12-pounder round shot gave only a mean penetration ranging from 4 to 4 1-2 feet.

#### VI. EXTREME RANGES.

*Shell Practice.*—The limits of the direct fire of our rifled 4 and 6-pounders lie between 4,375 and 4,600 yards; while the direct fire of our 6 and 12-pounders smooth bore could only be made use of up to 1,094 or 1,312 yards. Beyond these distances, when the ground was firm and even, *ricochet* (rolling) fire was employed; and a range was thus obtained in the neighborhood of 1,640, or 1,968 yards, according to the calibre.

But on modern battle-fields, interspersed, as they generally are, with hedges, ditches, mounds, and obstacles of all kind, the fire of smooth-bore ordnance was limited in most cases to its maximum range of 1,312 yards—for the reason that the least rise or depression in the ground

at the point of fall sufficed to vary the angle of deflection and the direction of the first rebound.\*

In 1864 trials were made in Switzerland for the purpose of ascertaining the effect of the *ricochet* of spherical projectiles on unfavorable ground. We quote from the report: "These experiments have proved that, as soon as the ground becomes slightly uneven, the rebounds lose their value."

"The advantages of *ricochet* firing have for some time past been doubted by the most distinguished artilleryists."

Although *ricochet* fire is not generally admitted for rifled guns, yet it may be resorted to by simply uncapping or otherwise disarming the percussion fuse.

On account of its inaccuracy, our Regulations do not recognize this fire, still it may be well not to reject it wholly, since the 4 and 6-pounder projectiles *ricochet*, even at great ranges, several times on our practice ground, which is neither firm nor level.

The *Aide-memoire portatif*, of 1864, asserts that the French 4 and 12-pounder shells yield a *ricochet*-trajectory of several bounds. Our 4 and 6-pounders, whose angles of fall are much smaller, should certainly be able to effect the same.

*Shrapnel Practice.*—The shrapnel range of our rifled guns extends to 1,968 and 2,187 yards; while with our old smooth bores it extended only to 1,094 and 1,312 yards.

We have already shown that our oblong shrapnel are as effective at 1,968 yards as the spherical at 437 yards.

*Canister Practice.*—The canister range of our new artillery does not exceed 547 yards; but, beginning at 437 yards, we can with shrapnel obtain *casse* effects at great distances.

#### VII. RAPIDITY OF FIRE.

Rapidity is an important element in field fire, for under otherwise equal conditions the battery which is served in the shortest time will evidently give the greatest effect.

In a trial for rapidity made in Prussia,† it was shown that to fire 25 rounds, taking good aim, required:

11 minutes with the Prussian rifled 4-pounder.  
12 " " French " "  
12½ " " Austrian " "

The Belgian 4 and 6-pounders, like the Prussian piece, can fire 25 rounds in 11 minutes.

In the Swiss experiments it was established that the same time was necessary to fire 26 rounds from the breech-loading, and 23 from the muzzle-loading, rifled 8-pounder.

According to the French *Aide-memoire*, to fire 10 rounds takes 4 minutes 50 seconds with the rifled 4-pounder, and 6 minutes 26 seconds with the 12-pounder.

The obsolete smooth-bore field-pieces could deliver:

3 rounds in 2 minutes (12-pounder.)  
2 " " 1 " (6-pounder.)  
1 " " 1 " (24-pounder long howitzer.)  
3 " " 2 " (14-pounder short " )

From these data it results that the mean time of a single round is:

26 seconds for the Belgian and Prussian rifled 4-pounder.  
28 " " French rifled 4-pdr. (Prussian trials.)  
29 " " " " (Aide-memoire.)  
30 " " Austrian rifled 4-pounder.  
30 " " old Belgian 6-pounder smooth bore.  
40 " " " 12-pounder " "

The Belgian 4-pounder, fired without aiming, but simply directed as is done for instance in repelling cavalry charges, delivers 6 rounds per minute, and, in experiments at Brasschaet in 1866, even in 50 seconds † a rapidity which has never been equalled by any muzzle-loader, rifled or smooth bore.

The greatest number of canister rounds that could be fired per minute from the old smooth bores was 4 with the 6-pounder, and 3 with the 12-pounder.

We see then that for rapidity of fire rifled breech-loaders are preferable to rifled or smooth-bore muzzle-loaders.

#### VIII. MOBILITY.

Our new field artillery possesses precious advantages in its increased mobility and capacity for carrying ammunition, of which convincing proof is furnished in the subjoined summary:

##### MOBILITY AND AMOUNT OF AMMUNITION TRANSPORTED.

Guns.	Total Weight of Carriage and Limber.	Number of Horses per Piece.	Load for Each Horse.	Number of rounds in Limber and Carriage Chests.	Number of rounds in Caisson.
Austrian rifled 4-pounder	2645 lbs.	6	441 lbs.	40	116
" " 8 " "	3810	6	635	34	94
French " 4 " "	2857	4	714	36	96
" " 12 " "	4271	6	712	18	54
Prussian " 4 " "	4417	6	569	49	108
" " 6 " "	3929	6	655	30	90
English " 9 " "	3512	6	585	34	90
" " 12 " "	4046	6	674	34	90
Belgian " 4 " "	3307	6	551	50	108
" " 6 " "	3858	6	643	38	100
" 6-pdr. S. B. (last model)	3825	6	637	65	195
" 12 " " "	4932	6	817	35	195
U. S. Light 12-pdr. S. B.*	3863	6	644	32	96
U. S. Rifled 3-in.†	3276	4	819 lbs.	50	150
		6	549		

\* Ordnance Manual of 1861.—Tr.

† The average weight of projectile is taken at 9 pounds.—Tr.

\* Schornhort, who cites some observations made upon the fall and rebound of round shot, says: "These have led to no reliable result; sometimes the angle of deflection did not exceed the angle of fire, but oftentimes it was twice or three times as great."

† On the 21st of August, 1871, a Krupp field gun fired at Essen, in the presence of the Emperor Don Pedro, who timed the results, 8 rounds in 30 seconds, and 9 rounds in one minute. (See ARMY AND NAVY JOURNAL, November 4, 1871.)

From the examination of this exhibit we find:

That the Austrian 4-pounder gun mounted weighs much less than the French, Belgian, Prussian, and English.\*

That the French 4-pounder is also lighter than the Belgian and Prussian, but that it carries only 36 rounds, that is 14 less than the former and 13 less than the latter.

That the Prussian 4-pounder is 110 lbs. heavier than the Belgian, and that it carries one round less.

That the old 6-pounder smooth bore (latest model) weighs 3,825 lbs., or 518 lbs. more than the 4-pounder by which it was superseded, and that it transports only 13 rounds more.

That the Austrian 8-pounder weighs 45 lbs. less than the Belgian 6-pounder, but that it has 8 rounds less.

That the Prussian 6-pounder is 71 lbs. heavier than the Belgian, and that it carries 8 rounds less.†

Although the weight of the Belgian 6-pounder is 26 lbs. greater per horse than that of the 12-pounder smooth bore, it does not follow that the mobility of the former is inferior, for it is well known that with a set of eight horses, the animals rarely take equal part in the traction, so that in fact a proportionately smaller load should be put upon them than upon a set of six.

We will add that a piece drawn by six horses can be conducted and manoeuvred much more easily than one drawn by eight; from which it follows that the 6-pounder gun is more mobile and manageable than the 12-pounder smooth bore which it replaced.

If we consider the weights of the different pieces with their carriages and limbers, and the number of horses harnessed to each, we may classify them in respect to mobility in the following order:

1. Austrian rifled 4-pounder battery (of the cavalry div.)
2. Belgian rifled 4-pounder battery
3. Prussian rifled 4-pounder battery
4. English rifled 9-pounder battery
5. Austrian rifled 8-pounder battery
6. Belgian 6-pounder s. b. battery
7. Belgian rifled 6-pounder battery
8. Prussian rifled 6-pounder battery
9. Austrian rifled 4-pounder battery (of the infantry div.)
10. English rifled 12-pounder battery
11. French rifled 4-pounder battery
12. French rifled 12-pounder battery

We will now give the amount of ammunition carried by each piece, including its caisson.

158 rounds by the Belgian rifled 4-pounder.

157 " " Prussian " "

156 " " Austrian " "

138 " " Belgian " 6-pounder.

132 " " French " 4-pounder.‡

128 " " Austrian " 8-pounder.

124 " " English " 9-pounder.

120 " " Prussian " 6-pounder.

73 " " French " 12-pounder.

This comparison shows that we may with reason be satisfied with the ammunition equipment of our rifled field guns.

We also call attention to the fact that the Belgian and Prussian batteries are more independent of their caissons than the others, because they carry a greater amount of ammunition in their limber chests.

We have drawn no parallel between the carrying capacity of the 6-pounder smooth bore and the rifled 4-pounder, for the reason that the projectiles of the former are much lighter, and that it will therefore transport a greater number than the latter.

The 12 pounder smoothbore with its caisson carries 140 rounds, only two more than the rifled 6-pounder.

#### IX. CONCLUSIONS.

The investigation to which we have subjected our new ordnance proves:

That we were justified in replacing the old smooth-bore by rifled guns, superior in every respect.

That our rifled 4 and 6-pounders meet all the requirements of service, in accuracy and rapidity of fire, in effect produced by their projectiles, in mobility, and in ammunition equipment.

That the efficacy of their fire is not surpassed by any other field artillery.

That breech-loaders are preferable to muzzle-loaders.

As the truth of this last conclusion has often been contested, we deem it proper to point out briefly the advantages and disadvantages of these two methods of loading.

##### A. BREECH-LOADING.

The forcing of the projectile suppresses the windage, and prevents balloting; the angles of departure and the initial velocities are therefore more uniform, and the stability of the axis of rotation, in leaving the bore, is better assured, from which result great regularity and precision of fire.

Cutting off the escape of gas due to the windage insures great velocities with relatively small charges.

The lead jacket of the forced projectile does not prevent the employment of heavy charges.

Forced projectiles do not wedge in the bore. The regularity of the movement of these projectiles does not mar or injure the bore.

The soft metal coating prevents damage to the lands.

The bursting of a projectile coated with soft metal has comparatively no baneful effect on the gun.

Breech-loaders can be fired more rapidly than muzzle-loaders.

\* The 4-pounder Austrian shell weighs 8 lbs.

3 3-4 " French " "

9 1-2 " Prussian " "

9 2-3 " Belgian " "

The 49 rounds of the Prussian 4-pounder consist of 44 shell and 5 canister.—Tr.

† The Prussian 6-pounder now carries 34 rounds—30 shell and 4 canister—or only four less than the Belgian.—Tr.

‡ This gun will occupy the first rank as soon as the capacity of the limber (including the small chests) and caisson shall have been increased to 44 and 120 rounds respectively. (v. s. page.)

§ In our service we characterize the movement of an oblong projectile, whose axis of rotation is not stable, or does not coincide with that of figure, by the not euphonious but expressive term, "wobbling."

\* General Abbott (p. 52) gives the penetration of a 24-pound solid shot in a sound white oak stump, at 850 yards, as 8 inches.—Tr.



The former are doubtless of a little more complicated construction than the latter, but the excellent fermature\* of the Belgian guns is so easily worked, that in field service, as well as in garrison, it gives rise to no inconvenience, as has indeed been proved in the Bohemian war.†

Cast-steel guns firing forced projectiles have an extraordinary life; a Belgian rifled 6-pounder has fired several thousand rounds, and is still perfectly serviceable, no part of its fermature even having been replaced.

In situations where field artillery opens from behind intrenchments or other cover, breech-loaders have the further advantage of offering greater protection to their gunners from the enemy's sharpshooters.

#### B. MUZZLE-LOADING.

As the axis of an enforced projectile does not coincide with the axis of the bore, its angles of departure constantly vary, which of course detracts seriously from the regularity and precision of fire.

The windage causes the loss of a portion of the gas resulting from the combustion of the charge, and this loss not being constant produces variations in the initial velocities, and consequently in the trajectories.

Hence to obtain great velocities we must use comparatively heavy charges, which the studs of the projectile cannot stand.‡

The projectiles may become wedged in the bore, and thus impede the firing.

The wobbling of the projectile in the bore, and the escape of gas owing to the windage, may give rise to enlargements and furrows.

The studs sometimes form false grooves, very detrimental to precision.§

The bursting of the projectile in the gun damages the rifling, and may render the gun altogether unserviceable.||

The ramming of each round home necessitates more time for loading.

Muzzle-loaders, having no fermature, are of a more simple construction than breech-loaders, an advantage which by no means compensates for the defects already enumerated.

Bronze guns of this class are rapidly used up. Experiments made at Châlons showed that even after a few rounds the driving edges of the lands began to wear; after 200 rounds cavities in the grooves and enlargements at the seat of the charge and elsewhere in the bore can be detected; after 400 rounds these injuries become very apparent. Many of the French guns became unserviceable during the Italian campaign. In experiments made in Switzerland in 1864, the bronze 8 and 12-pounder muzzle-loading rifles, firing studded projectiles, became unserviceable after 430 rounds.

Bronze guns which use projectiles coated with soft metal (Austrian system)\* have a longer life than the preceding; in the 4-pounder of this system the wear of the lands is evident after 750 rounds, and in the 8-pounder after 650 rounds.

Trials undertaken in Belgium in 1861 made it clear that even when firing forced projectiles, bronze guns rapidly deteriorate.

It has been claimed that the complexity of the fermature renders the use of breech-loaders difficult in war, and that in this respect the results of experimental firing ought not to be accepted absolutely. This objection, with all others, has been completely met by the test of the battle-field, which has confirmed in every point the experience of the firing-ground and of the field manoeuvres.

In the Danish war of 1864, the Prussians found no difficulty in working the fermature of their guns, and serving them under fire.

When the Austrian war broke out, Prussia had not yet fabricated a sufficient number of the new guns for the armament of all her batteries. Many of the latter consequently went through the campaign of 1866 with smooth bores, but immediately after the conclusion of peace, these were replaced by rifled 4 and 6-pounders.\*\*

This example was followed by Bavaria and Wurtemberg, who had experienced practically, in fighting them, the remarkable power of the Prussian guns.

Russia, Switzerland, and Spain, States whose artillery was armed prior to the Bohemian war with rifled muzzle-loaders, have since replaced them with rifled breech-loaders.

In these countries, and especially in Russia and Switzerland, extensive comparative trials were instituted, and after the crucial test of war had confirmed the teaching of the arsenal, their governments decided to abandon rifled muzzle-loaders and smooth bores—whose partisans become fewer from day to day.

#### X. ARTILLERY OF OTHER NATIONS—GUNS AND CARRIAGES.

##### France.

The French field artillery is composed of bronze (rifled) muzzle-loading 4-pounder, mountain 4-pounder, and 12-pounder guns.

The unhandiness of the latter has made it evident that

\* I take the liberty of using this word, from the French *fermeture*, in the sense of "breech-closing apparatus."—Tr.

† The London *Broad Arrow*, no mean authority, in a late number, says: "The details furnished by Captain Nicolson are the more valuable from having been verified by experience on the Prussian battle-fields." . . . "The destructive results obtained by the Prussian artillery in the late war fully confirm the correctness of Captain Nicolson's conclusions."—Tr.

‡ Our expanding projectiles were almost unknown in Europe when muzzle-loading rifles were generally used; the centring system (usually by means of studs) appearing to be the prevalent mode of insuring rotation. For an interesting account of this subject the reader is referred to Holley's "Ordnance and Armor."—Tr.

§ And the expanding device with its shearing action wears the directing edges.—Tr.

|| Our own experience during the war certainly confirms this. (See in connection Benton's "Ordnance and Gunnery," 3 Ed. page 649.—Tr.)

\* Analogous to the James projectiles, which were used with the bronze rifled 6-pounder during our war.

† The ranges of this projectile are given on page 116 of General Abbott's "Siege Artillery," etc., and do not exceed 1,750 yards.—Tr.

\*\* The Prussian Army had in all 492 rifled and 848 smooth bore guns; the Austrian, 774 rifled, 262 more than their adversaries.

a new calibre would have to be introduced; already an 8-pounder has been provisionally adopted, but a certain proportion of the 12-pounder batteries will be retained, to be used principally in destroying obstacles and covers.

The necessity of increasing the capacity of the (4-pounder) limber-chests has also been recognized; these contain, according to the *Aide-memoire* of 1864, 32 rounds, to which must be added four rounds of canister carried in the small axle-chests, making 36 rounds in all.

The weight of the carriage and limber thus loaded, we have seen, is 2,857 lbs., or 714 lbs. for each horse.

Lieutenant-Colonel Saunier's report on the French field artillery states that the complement of ammunition of the limber is to be increased from 32 to 40 rounds, thus augmenting its weight 81 lbs., and making the load of each horse 734 lbs. (In these calculations the gunners are not included.)

The caisson whose capacity is to be increased from 96 to 120 rounds, will then weigh 3,131 lbs., giving a load of 783 lbs. to each horse.

These figures show that the French 4-pounder batteries will become rather heavy unless six horses are substituted for the set of four now used.\*

##### England.

The English field artillery is armed with rifled 9 and 12-pounder Armstrong breech-loaders.† Armstrong 6 and 20-pounders are also in service, the former exclusively in the colonies, the latter for reserve and siege purposes.

These guns do not appear to be well adapted for colonial service; on the one hand the arsenals of these distant possessions are not provided with facilities for manufacturing and repairing them, and on the other the frequent alternations of heat and moisture, so prevalent in the tropics, soon render the Armstrong ammunition unserviceable.

This last is a very grave inconvenience, especially in India, where the ordnance depots must constantly be prepared for most unlooked-for requisitions.

We will add that colonial troops, not having to encounter forces organized like the armies of Europe, may content themselves with guns inferior to those of the continent.

These various circumstances, and the additional advantage of being able to utilize the bronze accumulated in the Indian arsenals, has led to the adoption of a muzzle-loading 7-pounder bronze mountain gun. Some steel muzzle-loaders of the same calibre have also been constructed.‡

Very recently a bronze rifled muzzle-loading 3-inch gun on the Maxwell system has been adopted for the mounted batteries; the horse artillery, however, still retain their Armstrong pieces.

The changes made in the armament of a portion of the batteries attached to the army of India have more than once induced the belief that the English were about to give up the Armstrong gun. Even if this has not come to pass, it must yet be acknowledged that the Armstrong breech apparatus is very defective, and that it is besides much less simple than the bolt and wedge fermatures adopted by most of the continental armies.

##### Prussia.

The Prussian field artillery has only two calibres—the cast-steel rifled 4 and 6-pounder breech-loaders; the latter have the bolt fermature similar to the Belgian, the former the wedge.

We deem it advisable here to correct some errors that have crept into the French military papers. The 4-pounder model 1864 guns, which the Prussians used in the war of 1866, had a rectangular mortice with sharp angles. In consequence of this vicious construction, two of them were "unbreeched" during the campaign. Consequently the statement "that a great number of steel guns burst at Sadowa," as advanced by some writers, is not true.

Immediately after the war the present model (1867) was adopted, in which the mortice is modified by rounding the angles on the posterior face.§

Some comparative trials to extremity made with the two models afforded conclusive evidence that the "unbreeching" mentioned above was due to the defect in construction just described, which is completely remedied in the new model. All the 6-pounders fabricated since the war have retained the bolt fermature.

It has recently been claimed that Prussia was about to give up her steel field guns, and substitute bronze, constructed on the same system. This is an error which arises from the fact that the Prussian War Department, having to provide for the armament of the reserve, and for the replacement of its obsolete siege guns, determined to avail itself of the immense quantity of bronze accumulated at its arsenals from the breaking up of the condemned bronze smooth bores. And this is a wise policy, for bronze may be used for pieces of small and medium calibres which are not to fire many rounds.

Besides several hundred 4 and 6-pounder cast steel guns fabricated since the Bohemian war, Prussia is at present introducing in great numbers sea-coast cannon of the same material. If she were compelled to return to bronze on account of the bursting of the cast steel guns at Sadowa, it is certain that 9 and 11-inch steel ordnance would not now be making.

Economy is the sole reason that has induced the Prussian artillery to make use of bronze in the fabrication of a portion of the guns of small calibre; so that cast steel has not been abandoned as asserted by some newspaper reporters.||

\* At the battle of St. Quentin, January 19, 1870, a 4-pounder shrapnel devised by General Treuille de Beaulieu, and adopted by the committee on National Defence December 17, 1870, was used for the first time, of which General Faidherbe speaks very highly in his "Campagne de l'armée du Nord en 1870-71." Its weight was 11 lbs., and the charge of the piece was increased from 1 lb. 5 to 1 lb. 13.—Tr.

† Recently 9 and 12-pounder muzzle-loading rifles have again been introduced, the latter piece having a calibre of 3.6 inches.

‡ The diameter of the bore of these guns is three inches.

§ For further details concerning the Prussian field ordnance, consult "Hand und Taschenbuch für Offiziere der Preussischen Feld-Artillerie."—Tr.

|| Belgium, having enough steel rifles for all the wants of her ser-

##### Austria.

After the Italian campaign of 1859, Austria adopted the French system of rifled cannon.

These were abandoned for the gun-cotton system of General Seuk, and the latter, in 1863, for the present bronzed rifled 4 and 8-pounders—with which the artillery were armed in the Bohemian campaign.

For mountain service a bronze rifled 3-pounder is used.

All these guns, as those of the Seuk system, are muzzle-loaders; and their projectiles are coated with an alloy of tin and zinc.\*

Although the Austrian artillery has already undergone three transformations since the introduction of rifled guns, it appears that its armament is again brought into question, a recently appointed board being charged with the study and trial of various systems of ordnance.

Since the adoption of breech-loading small arms many Austrian officers, of old opposed to this method of loading, are now of the opinion that it ought to be applied to the field, as has already been done to the siege and sea-coast artillery.

##### Russia.

Russia adopted in 1859 bronze rifled 4-pounders on the French system. These have been abandoned, and are replaced in part by cast-steel 4 and 9-pounder breech-loaders with the Krupp cylinder-prismatic (round wedge) fermature.

The Imperial Arsenals are also fabricating 4 and 9-pounder bronze breech-loaders, in order to complete the field material as economically as possible. The chamber of these guns is lined with a steel tube, to remedy the erosions and other deteriorations to which all bronze guns are subject.‡

This use of the bronze on hand is the more justifiable as the War Department is devoting all of its resources to the acquisition of rifled 9 and 11 cast-steel guns for sea-coast service.

##### Switzerland.

Switzerland, following the example of Russia, adopted in 1863 rifled muzzle-loaders, on the Müller system, but replaced them just before the war of 1866 by steel breech-loaders. This measure, taken after exhaustive trials, has not only been maintained after the war, but all the obsolete (bronze) 12-pounder smooth bores worth it have been converted into rifled breech-loaders.§

##### Spain.

Spain adopted in 1862 bronze muzzle-loading rifles, of the French system (*La blitta*.—Tr.), which were replaced in 1868 by steel breech-loaders.

Some bronze breech-loaders have also been fabricated. (The latest advices state that Turkey has also adopted the steel breech-loader, and that France is making experiments with a view to the same end.—Tr.)

##### XI. FUSES.

##### France.

France had in 1859 time fuses with six graduations for the shell of the 12-pounder smooth bore and 4-pounder rifle. Four of these graduations were done away with in 1860. This fuse then caused the explosion of the projectile at only two distances, the dangerous spaces being between 1,581 and 1,750 yards, and between 3,000 and 3,225 yards.

The space between the gun and 1,531 yards in front of it, and between 1,750 yards and 3,000 yards, escaped the action of the fragments—a very limited sphere of effectiveness.

For shrapnel, the French have of old a time fuse with three graduations, which causes the explosion at 875, 1,094, or 1,312 yards; but since 1864 a four-time fuse has been adopted, causing the explosion at 547, 875, 1,094, or 1,312 yards.

This fuse, like that of the shell, has the defect of permitting the existence of blank intervals, or spaces not subject to the action of the projectile.

There is, also, for shell, a percussion fuse, which, however, is only used in special cases.

In 1868 experiments were made at Châlons with a combination fuse, having two graduations for time, corresponding to 1,640 and 3,281 yards. We do not know whether this fuse has been adopted or not.||

vice, is now fabricating rifled 24-pounders from the bronze of the suppressed smooth bores. These guns have the advantage of great strength, their cast iron and their life is sufficient for the special use for which they are destined. Large grained powder is used with these pieces, for reasons that need not be explained to those who have listened to the teachings of Rôzman.

\* As a matter of professional interest, the translator adds the subjoined data concerning these guns, for which he is indebted to the "Rapport de la Haute Commission Militaire":

Gun.	Calibre.	Weight.	Charge.	Weight of shell.
Bronze.	Inches.	Pounds.	Pounds.	Pounds.
Rifled 3-pdr....	2.92	185	1	5
Rifled 4-pdr....	3.10	580	1½	8
Rifled 8-pdr....	3.97	1099	2	14½

† The translator quotes from "Armes de Guerre," by Major Vautier, Brussels, 1869: "Russia has succeeded in fabricating bronze rifled breech-loaders, with Krupp fermature and Broadwell ring, which are almost as strong as steel guns, by inserting the Broadwell ring in a steel cylinder lodged in the chamber of the bore, thus rapidly and economically filling its complement of pieces of small calibre."

‡ The translator extracts the following figures concerning the latest Swiss field-pieces from the *Zeitschrift für die Schweizerische Artillerie*, of June, 1871: The calibres are 3.55 inches and 4.13 inches; the total weight, equipped for the field, but excluding the cannoneers, is 3,176 and 4,566 lbs., respectively; and both pieces are drawn by six horses. They carry 36 and 32 rounds, 24 and 20 shell, 8 and 8 shrapnel, and 4 and 4 canister.

§ The Belgian Government has followed the same course.

|| During the campaign of 1870-71, the French used in their field service: Percussion fuses for shell; time fuses for shell with two graduations; time fuses for shrapnel with four graduations. A writer in a late number of the *Militär Wochenblatt*, the official military paper of the Prussian Army, states that the first-named fuse was not sensitive enough, and so far as the other two were concerned, "their explosion would not affect the enemy, unless the latter accidentally evinced sufficient friendship to post himself at the distances indicated by the fuses!"—Tr.



*Austria.*

Austria, prior to the war of 1866, used two fuses, a percussion for the 4 and 8-pounder shell, and a time for the shrapnel. The experience gained in the field led to some modifications in the details of these fuses, but both are retained.

We have already stated that in the ammunition equipment a number of the shrapnel have been replaced by shell, from which we may judge how these two fuses are esteemed.

*England.*

The ordinary and segment shell which are at present\* used with the 9 and 12-pounder Armstrong batteries are furnished with both time and percussion fuses.† There are various models, some of which are remarkable in their construction, but very complicated and costly. Lately (during the summer of 1869), comparative trials have taken place at Dartmoor with shrapnel, segment, and ordinary shell, furnished with time, percussion, and combination fuses. The results show that the percussion fuse is best adapted for ordinary and segment shell, and the time for shrapnel.

*Prussia.*

The Prussian field projectiles are at present furnished with percussion fuses. A time fuse is also used (Richter model) for the shrapnel of 6, 12, and 12-pounder rifled siege and garrison guns.

This fuse, modified, has been successfully tried with the 4 and 6-pounder field shrapnel, and it will doubtless be soon adopted.‡

*Russia.*

The Russian artillery has also adopted for its field shell and shrapnel a percussion fuse.

Experiments are being made with time and combination fuses, which however are designed to be used only with shrapnel.

*Switzerland.*

Swiss Shrapnel have a time fuse, and shell a percussion fuse. Trials were going on at Thun in February, 1870, with combination fuses of various kinds, which however were brought to a close for a time by an accident happening with the Stahel model.

*Holland.*

The Dutch 4-pounder shell and shrapnel use a time fuse, supplied with eleven tubes of various lengths, corresponding to distances increasing from 492 to 3,281 yards. A twelfth tube is reserved for throwing shell with light charges. These fuses require no adjustment until the range exceeds 820 yards.

\* In 1866, the Armstrong field guns were only supplied with segment shell, having neither ordinary shell nor canister.

† For full descriptions and drawings of the Pettman Percussion and Boxer time fuse, consult Eschenbacher's "Moderne Artillerie," Weimar, 1872. (Just issued.)—Tr.

‡ For description and drawing, see "Hand-buch," already noticed.—Tr.

### PLATE I.—PRACTICE WITH THE BELGIAN RIFLED 4-PDR., FIRING SHELL.

In these targets the dark circle represents a direct shot. The open circle represents a ricochet shot.

At 200 metres, in firing ten shots all the shots were grouped within a space of  $22 \times 45$  metres ( $72 \times 143$  feet) in the target on the left; in the centre target, in a space of  $17 \times 40$  metres ( $56 \times 131$  feet); in the right hand target, in a space of  $21 \times 25$  metres ( $69 \times 82$  feet).

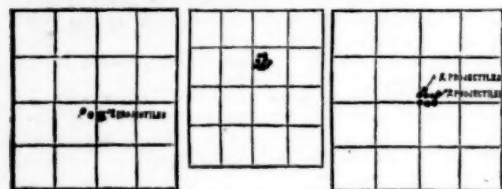
At 400 metres, of ten shots fired all were grouped in a space of  $50 \times 40$  metres ( $164 \times 131$  feet); in the centre target in a space of  $80 \times 80$  metres ( $263 \times 263$  feet); in the right hand target in a space of  $44 \times 65$  metres ( $144 \times 213$  feet).

At 600 metres, the twenty shots fired were grouped in a space of  $247 \times 280$  metres ( $811 \times 919$  feet) in the left hand target; in the centre target the ten shots fired were grouped in a space of  $174 \times 146$  metres ( $571 \times 479$  feet); in the right hand target, of 12 shots fired ten were grouped in a space of  $265 \times 390$  metres ( $870 \times 1280$  feet).

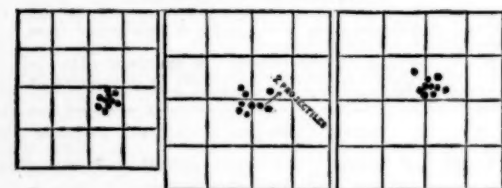
At 1,000 metres, all the twelve shots fired were grouped in a space of  $280 \times 285$  metres ( $919 \times 936$  feet).

At 1,800 metres, of thirty shots fired twenty-five were grouped in a space of  $385 \times 790$  metres ( $1263 \times 2593$  feet).

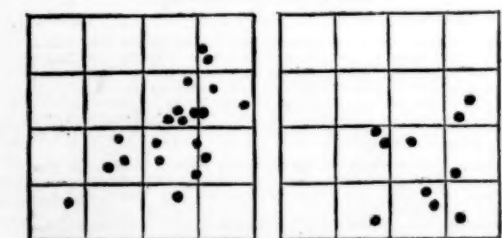
At 2,200 metres, of thirty-five shots fired twenty-eight were grouped in a space of  $350 \times 965$  metres ( $1132 \times 3167$  feet).



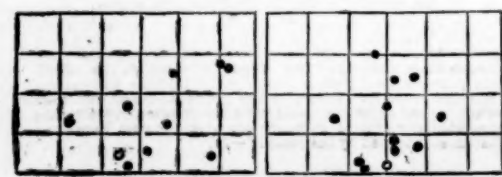
At 200 metres or 217 yards.



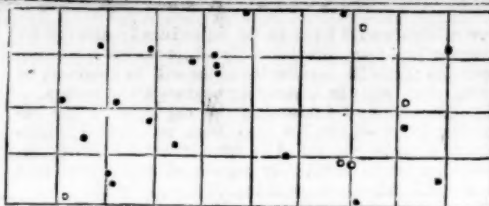
At 400 metres or 437 yards.



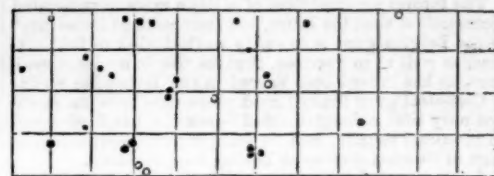
At 600 metres or 656 yards.



At 1,000 metres or 1,094 yards.



At 1,800 metres or 1,969 yards.



At 2,200 metres or 2,406 yards.

### PLATE II.—PRACTICE WITH THE BELGIAN RIFLED 6-PDR., FIRING SHELL.

At 200 metres the whole 10 shots fired were grouped in a space  $36 \times 20$  metres ( $118 \times 65$  feet) in the left-hand target; in the centre target in a space  $27 \times 34$  metres ( $89 \times 111$  feet); and in the right-hand target the 5 shots fired were all grouped in a space  $30 \times 15$  metres ( $98 \times 49$  feet).

At 400 metres 10 shots fired were all grouped in a space  $50 \times 34$  metres ( $164 \times 111$  feet) in the left-hand target; in the centre target in a space  $65 \times 59$  metres ( $213 \times 193$  feet); and in the right-hand target in a space  $30 \times 80$  metres ( $98 \times 263$  feet).

At 600 metres all of the 8 shots fired were grouped in a space of  $110 \times 155$  metres ( $361 \times 509$  feet) in the left-hand target; and in the right-hand target in a space of  $140 \times 130$  metres ( $459 \times 427$  feet).

At 800 metres of 15 shots fired all were grouped in a space  $240 \times 230$  metres ( $788 \times 755$  feet) in the left-hand target; in the right-hand target the 10 shots were all grouped in a space  $145 \times 160$  metres ( $476 \times 525$  feet).

At 1,000 metres 8 shots fired were all grouped in a space of  $145 \times 300$  metres ( $476 \times 985$  feet) in the left-hand target, and in the right-hand target in a space of  $245 \times 350$  metres ( $804 \times 1149$  feet).

At 1,300 metres the 12 shots fired were all grouped in a space of  $200 \times 410$  metres ( $656 \times 1346$  feet) in the left-hand target, and in the right-hand target in a space of  $265 \times 410$  metres ( $870 \times 1346$  feet).

At 1,800 metres, of 20 shots 15 were grouped in a space of  $380 \times 340$  metres ( $1247 \times 1116$  feet).

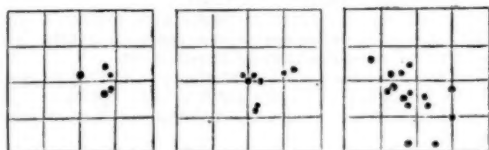
At 2,200 metres, of 19 shots 14 were grouped in a space of  $335 \times 470$  metres ( $1099 \times 1542$  feet) in the left-hand target, and in the right-hand target, of 30 shots 19 were grouped in a space of  $380 \times 700$  metres ( $1247 \times 2297$  feet).



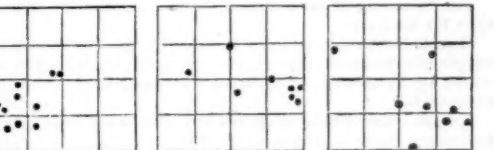
At 200 metres or 217 yards.



At 400 metres or 437 yards.

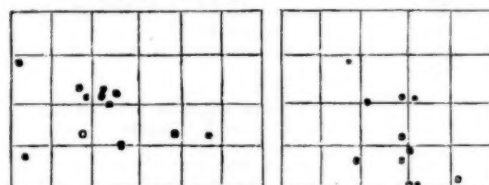


At 600 m. or 656 yds.

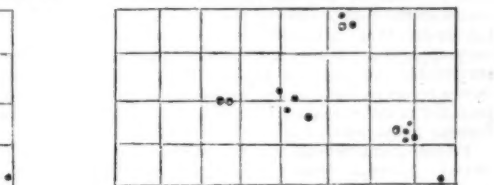


At 800 m. or 875 yds.

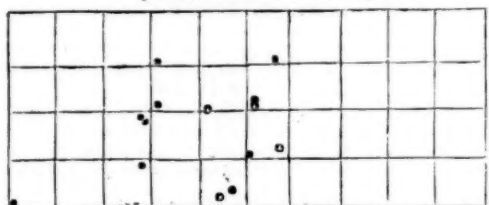
At 1,000 m. or 1,094 yds.



At 1,300 metres or 1,412 yards.



At 1,800 m. or 1,969 yards.



At 2,200 metres or 2,406 yards.

### PLATE III.—PRACTICE WITH THE BELGIAN 12-PDR., SMOOTH BORE.

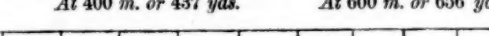
At 400 metres, of 10 shots fired 9 were grouped in a space of  $200 \times 630$  metres ( $656 \times 2068$  feet).

At 600 metres, of 15 shots all were grouped in a space of  $240 \times 515$  metres ( $788 \times 1690$  feet).

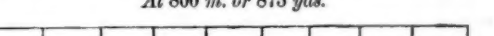
At 800 metres, of 25 shots 14 were grouped in a space of  $320 \times 1020$  metres ( $1058 \times 3361$  feet).

At 1,000 metres, of 25 shots 17 were grouped in a space of  $325 \times 1950$  metres ( $1068 \times 6398$  feet).

At 1,200 metres, of 10 shots 8 were grouped in a space of  $300 \times 1340$  metres ( $985 \times 4398$  feet) in the upper target, and in the lower target, of 20 shots 10 were grouped in a space of  $385 \times 1650$  metres ( $1264 \times 5415$  feet).

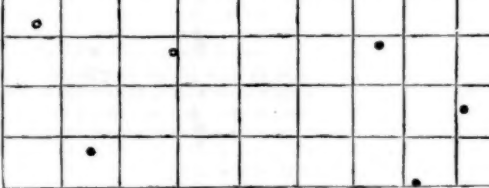


At 400 m. or 437 yards.

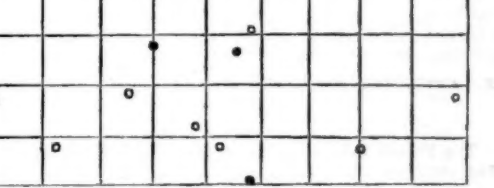


At 600 m. or 656 yards.

At 800 m. or 875 yards.



At 1,000 metres or 1,094 yards.



At 1,200 metres or 1,312 yards.